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Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

- Αύγουστος 2012 -

**Education is an ornament in prosperity and a refuge in
adversity.**

(Aristotle)

Newsletter of the Hellenic Society of Archaeometry

- August 2012 -

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ΠΙΝΑΚΑΣ ΠΕΡΙΕΧΟΜΕΝΩΝ – TABLE OF CONTENTS

ΣΥΝΕΔΡΙΑ – CONFERENCES/WORKSHOPS

- 6th SYMPOSIUM OF THE HELLENIC SOCIETY FOR ARCHAEOLOGY,
“Craft-based Cultural Influences in the Mediterranean”, May 8 - 11, 2013 -
Heraklion, Crete, 1st Call
- 6^o ΣΥΜΠΟΣΙΟ ΤΗΣ ΕΛΛΗΝΙΚΗΣ ΑΡΧΑΙΟΜΕΤΡΙΚΗΣ ΕΤΑΙΡΕΙΑΣ,
“Πολιτισμικές επιρροές στην έκφραση των τεχνικών δεξιοτήτων στη
Μεσόγειο”, Ηράκλειο 16-18 Μαΐου 2013, Κρήτη, 1^η Εγκύκλιος **page 5**
- Palaeo50 workshop, Oxford Long-term Ecology Laboratory, 13th-14th
December, 2012 **page 11**
- Introduction to the geology of Cyprus with an emphasis on the economic rocks
and minerals of the island used in Antiquity - A NARNIA Project Training
Course, Nicosia, 3rd -5th September 2012 **page 12**
- AGU Fall Meeting 2012: "Insights to the Modern and Palaeo Carbon Cycle:
Isotopic and Biomarker Perspectives" (session B035) **page 14**
- AGU V21 Innovations in isotope mass spectrometry and isotope metrology in
geosciences, Dec. 3-7, San Francisco **page 16**
- 3^o Συμπόσιο Αρχαιολογική Έρευνα και Νέες Τεχνολογίες, Πανεπιστήμιο
Πελοποννήσου, Πανεπιστημιακή Σχολή Καλαμάτας - 3rd Symposium
Archaeological Research and New Technologies, University of Peloponnese,
Faculty of Humanities and Cultural Studies, Kalamata **page 18**

ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ – JOB VACANCIES/FELLOWSHIPS

- Senior Lecturer/Reader in Human Osteology - University of Sheffield -
Department of Archaeology **page 22**
- Call for Tenure Track in Ecological Archaeology at Ghent University **page 24**
- New research grants in Marine and Maritime Archaeology **page 27**
- Term assistant in metal restoration - Call for applications **page 28**
- Exzellenzcluster 264 Topoi - The Formation and Transformation of Space and
Knowledge in Ancient Civilizations - Postdoctoral Fellowship Announcement
(History of Science) **page 29**

ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS

- Hesperia Goes Open Access! **page 30**
- Announcement - RADIOCARBON LABORATORY QUALITY
ASSURANCE PROGRAMME (SIRI) **page 32**

INTERNET SITES

The second installment of the Utarp Information System (UIS) **page 33**

DataBases about Aegean Subjects (DBAS) **page 34**

ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

NEW BRITISH ARCHAEOLOGICAL REPORTS AND OTHER TITLES –
JUNE 2012 **page 36**

Ceramic Finds: Typological and Technological Studies of the Pottery Remains
from Tell Hesban and Vicinity. Hesban 11 **page 39**

Current Anthropology 53/4, August 2012 **page 40**

Corpus of Cypriot Artefacts of the Early Bronze Age Part 4. Studies in
Mediterranean Archaeology Vol. III.4 **page 42**

Isthmia IX: The Roman and Byzantine Graves and Human Remains, by
Joseph L. Rife **page 43**

The History of Mathematical Proof in Ancient Traditions Edited by Karine
Chemla **page 46**

International Journal of Nautical Archaeology **page 48**

An Ancient Relation between Units of Length and Volume Based on a Sphere . **page 49**

The Age of Titans: the Rise and Fall of the Great Hellenistic Navies, William
M. Murray **page 50**

What Did the Romans Know?: an Inquiry into Science and Worldmaking, by
Daryn Lehoux **page 52**

ΕΙΛΗΞΕΙΣ - NEWS RELEASE

Unexpected beauty and unanswered riddles from a desert cave - Looking for
Dead Sea scrolls in the desert in 1961, a team came upon a treasure hidden
6,500 years before By Matti Friedman **page 56**

Egypt's Sphinx, Pyramids threatened by groundwater, hydrologists warn, by
Nevine El-Aref **page 58**

Forgotten cultural treasures of Sidon's past **page 59**

A Bone Here, a Bead There: On the Trail of Human Origins, By JOHN
NOBLE WILFORD **page 61**

The Crusaders' last stand: Pot of gold worth £300,000 found in fortress where
it was buried by doomed force of Christian knight, By Rob Waugh **page 67**

Two ancient sites to get a boost **page 69**

Major project to document all Egypt's sites starts with Beni Hassan tombs, by Nevine El-Aref	page 70
Archaeologists Discover Bulgarian Herculaneum	page 72
Archaeologists unearth temple to Demeter in Sicily	page 74
Archaeologists Unearth and Reopen the Achaemenid Sewage System at Persepolis	page 75
From turbines to Tetricus: engineering technology reveals secrets of Roman coins	page 76
Sea surrenders pristine Roman sarcophagus	page 79
Bronze Age workshop found	page 80
Early humans settled in Arabia, By Dan Vergano	page 81
Akko's Magnificent Harbor from 2,300 Years Ago is Exposed on the Seabed ..	page 83
Cave Yields Early Record of Domestic Animals, By NICHOLAS BAKALAR	page 85
Random discovery results with the first 'Archeo Park'	page 86
Ancient village holds lifestyle clues for archaeologists, By Daniel Miller	page 88
Pharaoh's playground revealed by missing fractals, by Colin Barras	page 92
Revolutionizing Archaeology - Flying Lasers Reveal Buried Historical Structures, By Markus Becker	page 93
Funerary boat of King Den (Dyn1)	page 96

ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS

6TH SYMPOSIUM OF THE HELLENIC SOCIETY FOR ARCHAEOLOGY, “CRAFT- BASED CULTURAL INFLUENCES IN THE MEDITERRANEAN”, MAY 8 - 11, 2013 - HERAKLION, CRETE, 1ST CALL

Dear friends and colleagues,

The Hellenic Society for Archaeology (H.S.A.) announces its 6th Symposium under the title “*Craft-based Cultural Influences in the Mediterranean*”.

The symposium will be held in May 8-11, 2013, in Heraklion, Crete, Greece.

Further information is available in the flyer attached, as well as at www.archaeometry.gr.

Please forward this to your colleagues/contacts.

On behalf of the Organising Committee

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The Hellenic Society for Archaeology announces its 6th Symposium under the title “*Craft-based Cultural Influences in the Mediterranean*”.

The symposium will be held in May 8-11, 2013, in Heraklion, Crete, Greece.

About the Sessions of the Symposium

The science-based study of cultural heritage is usually focused on the examination and analysis of material remains, discovered at archaeological and historical sites. The technical examination of these remains, in the laboratory, provides information about raw materials and their sources, production technology, dissemination and the use of materials, preservation and weathering mechanisms. The archaeometric approach to

archaeological sites and their surrounding landscape has concentrated on geophysical prospection, remote sensing and 3-D visualisation of monuments and historic buildings. However, apart from the material culture that constitutes the main component of our cultural heritage there also exists, the intangible cultural heritage, which includes, among others, living traditions, knowledge and skills associated with individual crafts. Ethnographic studies of traditional crafts has been one approach in revealing insights in this intangible cultural heritage, while experimental archaeology into traditional practices has offered another. From the point of view of archaeolandscape studies, the intangible aspect thereof involves our sensory perception of it and constitutes a relatively new area of research.

The Scientific Committee of the 6th Symposium for Archaeometry, in an attempt to address

a) the debate on crafts and craftsmen and their contribution to both the material and intangible cultural heritage and
b) the broader issues associated with archaeolandscape studies within the context of the Mediterranean, will be pleased to receive abstracts relating to the following Thematic Sessions:

- **Integrated studies on provenance and technology of material remains**
- **Investigating landscapes and the intangible cultural heritage within**
- **Conservation science and technology**
- **Biomaterials and archaeology**
- **Integrated studies on provenance and technology of material remains**

The session on *Integrated studies on provenance and technology of material remains* invites speakers to present their studies on the dating and development and dissemination of material culture (metals, pottery, lithics, glass etc) in the Mediterranean Region and beyond; also, when appropriate, to do so in an integrated manner and by looking at the material remains from individual crafts not in isolation but as part of a network of activities, be it domestic, industrial or commercial.

Investigating landscapes: the interface between tangible and intangible cultural heritage

Archaeo-landscapes are more than the sum total of their topography, geology, hydrology and a host of other environmental and anthropogenic parameters. Over and beyond the material and geo-environmental remains, archaeo-landscapes are the ‘setting’ of an intangible heritage in which the collective memory is continuously played out, embedded and willingly preserved.

This session on *Investigating landscapes: the interface between tangible and intangible cultural heritage* invites speakers to attempt to look at the landscape holistically and to highlight the interdependency of the tangible (the natural environment and the material culture within from crafts and other activities) and the intangible aspect thereof (our perception of it).

Conservation Science and Technology

Conservation Science and Technology addresses the study of monuments, artefacts, collections and archaeological finds, aiming to elucidate their interaction with the environment and subsequent degradation processes, as well as to provide sustainable conservation/ restoration solutions. Further to the above practices, research in Conservation Science focuses on traditional crafts and their development, as well as on

the skills involved in craftsmanship, through the investigation of production technology, materials' properties and the durability of the assets of our Mediterranean Cultural Heritage.

The *Conservation Science and Technology session* attempts to provide an open forum for discussing projects, involving mainstream conservation issues (degradation processes, durability aspects, etc) with technological aspects of material culture, the development, influences and differences between traditional crafts within Mediterranean region.

Biomaterials and environmental remains

Biomolecular archaeology encompasses the study of organic compounds found in living organisms that might be preserved in the archaeological record, including DNA analysis and the analysis of lipids, carbohydrates and proteins found in a range of archaeological material (i.e. mummified remains, soils, bones, organic residues, amorphous deposits) as well as the study of bones, seeds and other botanical remains. Such studies provide insights into paleoenvironmental conditions, paleopathology and dietary habits.

The *Biomaterials and environmental remains session* aims at bringing together papers dealing with the study of the whole spectrum of biological remains, on issues of diet and subsistence, migration of human population, domestication of plant and animal resources, diagenesis and preservation; also to present technological advances and the use of new technologies for the study of ancient biomolecules.

Organising Committee

The Council of the HSA with the generous contribution of Academic Institutions in Crete (to be announced). Further information will be available soon at www.archaeometry.gr as well as in the 2nd call.

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Abstract Submission by: 31st of October 2012.

6^ο ΣΥΜΠΟΣΙΟ ΤΗΣ ΕΛΛΗΝΙΚΗΣ
ΑΡΧΑΙΟΜΕΤΡΙΚΗΣ ΕΤΑΙΡΕΙΑΣ,
“ΠΟΛΙΤΙΣΜΙΚΕΣ ΕΠΙΡΡΟΕΣ ΣΤΗΝ ΕΚΦΡΑΣΗ
ΤΩΝ ΤΕΧΝΙΚΩΝ ΔΕΞΙΟΤΗΤΩΝ ΣΤΗ
ΜΕΣΟΓΕΙΟ”, ΗΡΆΚΛΕΙΟ 16-18 ΜΑΪΟΥ 2013,
ΚΡήΤΗ, 1^Η ΕΓΚύΚΛΙΟΣ

Αγαπητοί φίλοι και συνάδελφοι,

Η Ελληνική Αρχαιομετρική Εταιρεία (Ε.Α.Ε.) αναγγέλλει τη διοργάνωση του 6^{ου} Συμποσίου της, υπό τον τίτλο *“Πολιτισμικές επιρροές στην έκφραση των τεχνικών δεξιοτήτων στη Μεσόγειο”*.

Το Συμπόσιο θα πραγματοποιηθεί στο Ηράκλειο Κρήτης, από 16 ως 18 Μαΐου 2013. Για περισσότερες πληροφορίες δείτε το συνημμένο φυλλάδιο και επισκεφθείτε την ιστοσελίδα της Ε.Α.Ε., www.archaeometry.gr.

Παρακαλώ, προωθήστε αυτή την ανακοίνωση στους συναδέλφους και γνωστούς σας.

Εκ μέρους της Οργανωτικής Επιτροπής

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Η Ελληνική Αρχαιομετρική Εταιρεία (Ε.Α.Ε.) αναγγέλλει τη διοργάνωση του 6^{ου} Συμποσίου της, υπό τον τίτλο *“Πολιτισμικές επιρροές στην έκφραση των τεχνικών δεξιοτήτων στη Μεσόγειο”*. Το Συμπόσιο θα πραγματοποιηθεί στο Ηράκλειο Κρήτης από 16 ως 18 Μαΐου 2013.

Περιεχόμενο και Θεματολογία

Η μελέτη της πολιτισμικής κληρονομιάς από τη σκοπιά των Θετικών Επιστημών, συνήθως εστιάζεται στην εξέταση και ανάλυση των υλικών καταλοίπων με σκοπό να αποκομίσει πληροφορίες που σχετίζονται με την τεχνολογία κατασκευής των τέχνηργων,

τις χρηστικές ιδιότητες και τη διακίνησή τους, τον χαρακτηρισμό και τις πηγές των πρώτων υλών, την απόλυτη χρονολόγηση των ευρημάτων, τη διερεύνηση των μηχανισμών διάβρωσης, την προστασία και προβολή τους, καθώς και την κατανόηση των ταφονομικών συνθηκών.

Παράλληλα, οι τεχνικές τηλεπισκόπησης και οι γεωφυσικές διασκοπήσεις, πριν την ανάληψη ανασκαφικών ερευνών, συνιστούν τα πρωτεύοντα μέσα ερμηνείας του πεδίου και εντοπισμού αρχαιολογικών καταλοίπων στο υπέδαφος.

Τις τελευταίες δεκαετίες η επιστημονική έρευνα των αρχαιολογικών ευρημάτων έχει εξελιχθεί στη μελέτη των τεχνικών δεξιοτήτων (crafts), ενώ οι διαδικασίες/διεργασίες εντοπισμού αρχαιολογικών θέσεων και η μελέτη της διαμόρφωσης του τοπίου από φυσικούς ή ανθρώπινους παράγοντες έχει εξελιχθεί στη κατανόηση και ανασύνθεση του αρχαίου τοπίου (archaeo-landscape). Αλλά τόσο τα αρχαιολογικά υλικά-τεχνικές δεξιότητες όσο και οι αρχαιολογικοί χώροι-τοπίο που τους περιβάλλει είναι κάτι περισσότερο από το άθροισμα των συνισταμένων τους. Η πολιτιστική κληρονομιά δεν βασίζεται μόνο στα υλικά κατάλοιπα που είναι απτά, ορατά και συγκεκριμένα. Περιλαμβάνει και άυλα κατάλοιπα που αφορούν, όσον αφορά τις δεξιότητες, στην παράδοση, στην γνώση και στην εμπειρία που συνδέονται με αυτές.

Όσον αφορά στον αρχαιολογικό χώρο-αρχαιοτοπίο, η άυλη πολιτιστική κληρονομιά έχει άμεση σχέση με την αντίληψη που έχουμε για τον συγκεκριμένο χώρο, την επιθυμία και δραστηριοποίηση για την προστασία και διατήρηση του. Μέχρι τώρα η αρχαιολογική έρευνα έχει ασχοληθεί αποκλειστικά με την μελέτη των υλικών καταλοίπων.

Πέραν λοιπόν των αναλύσεων των υλικών καταλοίπων, τις γεωφυσικές και άλλες τεχνικές μελέτες αρχαιοτοπίου, το 6^ο Συμπόσιο της ΕΑΕ στοχεύει και στην ανάδειξη παραμέτρων της Πολιτιστικής Κληρονομιάς, οι οποίες παραμένουν ακόμη αδιευκρίνιστες.

Η Οργανωτική Επιτροπή, επιθυμώντας να παρακινήσει ένα γόνιμο προβληματισμό απευθύνει πρόσκληση προς τους ενδιαφερόμενους να υποβάλουν εργασίες, (συνοδευόμενες από κατατοπιστικές περιλήψεις) σχετιζόμενες κυρίως με τις ακόλουθες θεματικές ενότητες:

- **Διεπιστημονικές και ολοκληρωμένες μελέτες τεχνολογίας και προέλευσης επί υλικών καταλοίπων**
- **Ανασύνθεση αρχαίου τοπίου και διερεύνηση πολιτισμικών συσχετίσεων**
- **Έρευνα και τεχνολογία επί θεμάτων συντήρησης**
- **Βιο-υλικά και Αρχαιολογία**

Στην ενότητα **διεπιστημονικές και ολοκληρωμένες μελέτες τεχνολογίας και προέλευσης επί υλικών καταλοίπων** θα περιληφθούν μελέτες σχετιζόμενες με την ανάπτυξη, διακίνηση και διάδοση του υλικού πολιτισμού στη Μεσόγειο και πέραν αυτής.

Η βαθύτερη κατανόηση των ενεργειών που είχαν αναληφθεί για τη διακίνηση των πρώτων υλών και την κατασκευή των τέχνηργων, όχι απομονωμένα αλλά στο πλαίσιο πολλαπλών δραστηριοτήτων της καθημερινής ζωής, θα συνεισφέρει στην απόκτηση νέων γνώσεων για την σχέση των υλικών καταλοίπων (ανόργανων, ποικίλων κατηγοριών) και της πολιτισμικής κληρονομιάς.

Στα ζητήματα *ανασύνθεσης αρχαίου τοπίου* οι μορφολογικές, γεωλογικές, υδρολογικές, οικολογικές, φυσικές και περιβαλλοντικές παράμετροι εξελίσσονται διαχρονικά και βρίσκονται σε αλληλεπίδραση με τους πολιτιστικά - και παράλληλα - εξελισσόμενους οικιστές / τεχνουργούς. Κάτω από τέτοιες συνθήκες αποτελεί ερευνητική πρόκληση η διερεύνηση ερωτημάτων σχετικών με τη συσσώρευση και διάδοση τόσο της συλλογικής τεχνολογικής (και όχι μόνο) μνήμης που σχετίζεται άμεσα με τον αρχαιολογικό χώρο όσο και της αντίληψης του ευρύτερου τοπίου από τους σύγχρονους κατοίκους και επισκέπτες. Σκοπός είναι η αποκάλυψη αφανών, έως τώρα, πτυχών της πολιτισμικής εξέλιξης της Μεσογείου αλλά και της κατανόησης της θέσης που παίρνουν κάτοικοι, πολιτεία και επισκέπτες απέναντι στο εξεταζόμενο τοπίο.

Στο πλαίσιο της *έρευνας και τεχνολογίας επί θεμάτων συντήρησης* μελετώνται τα μνημεία, τα αρχαιολογικά ευρήματα και οι αντίστοιχες συλλογές, με βασικό στόχο αρχικά την κατανόηση της αλληλεπίδρασής τους με το περιβάλλον τους, τη διερεύνηση των μηχανισμών φθοράς τους και, στη συνέχεια, την εξεύρεση κατάλληλων υλικών και δράσεων για την προστασία, αποκατάσταση και διατήρησή τους. Οι έρευνες στη συντήρηση, ωστόσο, εστιάζονται και σε θέματα αρχαίας τεχνογνωσίας, τεχνικών δεξιοτήτων και γνώσεων. Ταυτόχρονα λοιπόν με την παρουσίαση ολοκληρωμένων μελετών συντήρησης, ανθεκτικότητας, μηχανισμών φθοράς και άλλα πρακτικά ζητήματα, η παρούσα ενότητα ενδιαφέρεται να ανοίξει τη συζήτηση γύρω από την αλληλεπίδραση της Επιστήμης της Συντήρησης με τις διάφορες πτυχές της υλικής και άυλης πολιτιστικής κληρονομιάς, όπως η επίδραση των ιδιαίτερων πολιτισμικών και κοινωνικών χαρακτηριστικών στην ανάπτυξη των διακοσμητικών και οικοδομικών τεχνών, οι επιρροές και οι διαφορές μεταξύ παραδοσιακών τεχνών και τεχνιτών στην Ελλάδα και την ευρύτερη περιοχή της Μεσογείου, καθώς και οι επιλογές στη χρήση συγκεκριμένων υλικών, εργαλείων και τεχνικών.

Στην ενότητα *βιο-υλικά και αρχαιολογία* επιχειρείται η σύγκλιση ειδικών από διαφορετικά πεδία, ώστε μέσω των αναλυτικών μελετών των ποικίλων κατηγοριών βιολογικών καταλοίπων να διερευνηθούν σημαντικά αρχαιολογικά ζητήματα. Σε αυτή την ενότητα περιλαμβάνονται αντικείμενα δίαιτας, διαβίωσης και μετανάστευσης ανθρώπινων πληθυσμών, εξημέρωσης άγριας χλωρίδας και πανίδας, διαγένεσης, διατήρησης βιο-υλικών και νέες τεχνολογίες για τη μελέτη των αρχαίων βιο-μοριακών συστημάτων.

Οργανωτική Επιτροπή

Τις οργανωτικές δραστηριότητες του Συμποσίου θα αναλάβει το Διοικητικό Συμβούλιο της Ε.Α.Ε., σε συνεργασία με τα Ακαδημαϊκά Ιδρύματα της Κρήτης.

Λεπτομερέστερες πληροφορίες θα γνωστοποιηθούν στην ιστοσελίδα της Εταιρείας (www.archaeometry.gr) και στην επικείμενη 2η Εγκύκλιο του Συμποσίου.

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Υποβολή περιλήψεων: 31 Οκτωβρίου 2012.

PALAEO50 WORKSHOP, OXFORD LONG-TERM ECOLOGY LABORATORY, 13TH-14TH DECEMBER, 2012

Dear Colleagues,

Apologies for cross posting. We are organising Palaeo50, a horizon scanning workshop, at the Oxford Long-term Ecology Laboratory on 13th-14th December, 2012, which aims to identify the 50 most important questions in palaeoecology and highlight key areas of a new research agenda. We are hoping for an international response, from palaeoecologists, ecologists and policy makers, who are interested in understanding the biotic responses to environmental change from annual to geological timescales, and the applications of this knowledge for ecosystem management. Please forward this on to any colleagues that you think might be interested.

We are asking that members of the community submit the questions that they think palaeoecology needs to answer by 31st October 2012, by following the link at our website, <http://www.oxlel.ox.ac.uk/50-pressing-questions-palaeoecology>. Examples of the types of questions that we are looking for are provided on the submission page. These questions will be debated at the workshop, whittled down to a list of 50, and submitted as a co-authored manuscript for publication. All contributions will be acknowledged, but there is option to remain anonymous if you prefer to do so.

We are also looking for participants to attend the workshop. Delegates will be grouped into working groups organised around the 5 themes which are described in detail at our website. The price of the workshop will be £75, and the deadline for applicants is 14th September 2012. An application form can be downloaded at our website (<http://www.oxlel.ox.ac.uk/50-pressing-questions-palaeoecology>). We also have a small amount of funding available which can cover the registration cost for postgraduate students and early career researchers.

Please do get in touch (palaeo50@zoo.ox.ac.uk) if you have any further queries. We look forward to receiving your questions!

Best wishes,

Alistair Seddon*, Ambroise Baker* and Anson Mackay**

*Oxford Long-term Ecology Laboratory, University of Oxford.

**Environmental Change Research Centre, UCL

Follow us on Twitter: [@Palaeo50](https://twitter.com/Palaeo50)

Sponsored by PAGES, The Quaternary Research Association, the British Ecological Society, and the Oxford Martin School.

INTRODUCTION TO THE GEOLOGY OF CYPRUS WITH AN EMPHASIS ON THE ECONOMIC ROCKS AND MINERALS OF THE ISLAND USED IN ANTIQUITY - A NARNIA PROJECT TRAINING COURSE, NICOSIA, 3RD - 5TH SEPTEMBER 2012

The Archaeological Research Unit of the University of Cyprus is pleased to announce a three-day training course on the geology of Cyprus with a particular focus on the economic rocks and minerals of the island used in Antiquity. The course, which is co-organized with the Department of Geological Survey of the Republic of Cyprus, is a training activity of the “New Archaeological Research Network for Integrating Approaches to ancient material studies (NARNIA)” Project, a Marie Curie Initial Training Network, funded by the FP7 of the European Union.

A series of specialised lectures on different aspects of the geology of Cyprus will be offered. They will be followed by lectures on the procurement and use of rocks and minerals (copper ores, pigments, building materials, cherts, clays etc) on the island in antiquity. The course will be complemented with two excursions: one full day excursion to the Troodos ophiolite and copper mines, and one half day excursion to the sedimentary zone and quarries. The field trips will offer the opportunity to participants to learn about the different rocks and minerals which were important in Antiquity. For the preliminary program please visit the NARNIA website (<http://narnia-itn.eu/training-courses/>).

The course is open to interested researchers outside the NARNIA community and participation is free of charge. Priority will be given to graduate students who specialise in related topics. You are kindly asked to express your interest by Monday, the 6th of August 2012, as places are limited and will be allocated on a first-come, first-served basis.

Additional information

Program: please visit the NARNIA website
(<http://narnia-itn.eu/training-courses/>)

Dates: 3rd – 5th September 2012

Venue: Archaeological Research Unit, University of Cyprus,
12 Gladstonos street, 1095 Nicosia

Scientific coordinators: Dr Vasiliki Kassianidou (University of Cyprus),
Dr Eleni Georghiou Morisseau (Director, Geological Survey
Department),
Dr Zomenia Zomeni (Geological Survey Department)

Organising committee: Dr Vasiliki Kassianidou (University of Cyprus),
Dr Zomenia Zomeni (Geological Survey Department),
Dr Maria Dikomitou-Eliadou (University of Cyprus)

No. of places available: interested researchers outside the NARNIA community and participation is free of charge. Priority will be given to graduate students who specialise in related topics. You are kindly asked to express your interest by Monday, the 6th of August 2012, as places are limited and will be allocated on a first-come, first-served basis.

Fee: No fee. The coffee breaks and excursions are covered by the NARNIA project and are offered for free to all participants. The cost of travel to, and lunches and accommodation while in Cyprus is not provided by the organisers or the project.

For enquiries please contact Maria Dikomitou-Eliadou, email: m.dikom@ucy.ac.cy

Maria Dikomitou Eliadou

Project Manager
New Archaeological Research Network for Integrating Approaches to ancient material studies
(NARNIA)
FP7 - PEOPLE - Marie Curie European Actions
www.narnia-itn.eu

Research Fellow
Archaeological Research Unit
Department of History and Archaeology
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fax: +357-22-674101



AGU FALL MEETING 2012: "INSIGHTS TO THE MODERN AND PALAEO CARBON CYCLE: ISOTOPIC AND BIOMARKER PERSPECTIVES" (SESSION B035)

We invite you to submit abstracts to the above session, run in conjunction with the "Development of Isotopic Proxies for Palaeoenvironmental Interpretation: A Carbon Perspective" (DIPPI-C) working group, at this years AGU Fall Meeting in San Francisco (3rd - 7th December). Associated with the DIPPI-C working group and this AGU session is a special theme in the AGU and Geochemical Society Journal Geochemistry, Geophysics, Geosystems (G-Cubed) which is currently open for manuscript submission for research related to this session (i.e. C cycle processes at a range of spatial and temporal scales using organic and inorganic carbon geochemistry)[for more info - <http://www.agu.org/journals/gc/theme.shtml?collectionCode=CARBON1&journalCode=GC>].

Session conveners:

Chris Brodie (The University of Hong Kong, Hong Kong SAR)
Phil Meyers (The University of Michigan, USA)
James Casford (Durham University, UK)
Jesper Olsen (Aarhus University, Denmark)

Session description:

Understanding the carbon (C) cycle is central to constraining environmental processes from biological productivity through to palaeoenvironmental interpretation. Quantifying these processes at different spatial and temporal scales requires an integrative inter-disciplinary approach incorporating both organic and inorganic C. This session aims to bring together researchers that use bulk and compound specific $\delta^{13}\text{C}$, $\Delta^{14}\text{C}$ and biomarker distributions in marine and terrestrial, modern and palaeo environments. We encourage contributions investigating biological productivity; short- and long-term C fluxes; diagenesis, preservation and soil processes; C cycling in modern and palaeo-environments; and method development.

Invited presenters:

Prof. Peter Swart (The Univeristy of Miami, USA)
Prof. Katherine Freeman (Pennsylvania State University, USA)
[More presenters to be announced shortly]

Abstract submission can be done via <http://agu-fm12.abstractcentral.com/> [Deadline is 8th August 2012, 23:59 ET]

Student Travel Grant Applications:

<http://www.agu.org/education/grants/travel.shtml> [Deadline is 15th August 2012, 23:59ET]

All the best,

Brodie

*****Dr.

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

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

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

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



AGU V21 INNOVATIONS IN ISOTOPE MASS SPECTROMETRY AND ISOTOPE METROLOGY IN GEOSCIENCES, DEC. 3-7, SAN FRANCISCO

Dear All,

My colleagues Chuan-Chou Shen, Claudia Bouman, and I are arranging a session focusing on frontier geochemistry isotopic techniques at this coming 2012 AGU fall meeting (Dec. 3-7, San Francisco), and we would be very delighted if you would attend and present your latest developed isotopic analytical techniques in our session. Please feel free to forward this to any other interested parties.

A description of our session:

Session V21: Innovations in isotope mass spectrometry and isotope metrology in geosciences

Isotope mass spectrometry is essential to geochemical research, and recent advances in solution and in-situ technologies and methodologies on AMS, TIMS, MC-ICPMS, SIMS, Noble Gas MS, High Res IR MS, and others have spawned new applications in diverse fields of earth sciences. We invite contributions that emphasize new developments in isotope mass spectrometry, including advances in instrumentation, establishment of isotope reference materials, techniques for high precision ratio determinations, and methods for measuring radiogenic, cosmogenic, and stable isotopes, among others.

Please note the deadline for abstract submissions is 8 August 23:59EDT/03:59 +1 GMT. More information about the Conference is available at <http://fallmeeting.agu.org/2012/>

Please consider this invitation to join our session, and we look forward to seeing you at AGU this December.

Sincerely,

Session conveners:

Chuan-Chou Shen (National Taiwan University, Taiwan (river@ntu.edu.tw))

Claudia Bouman: Thermo Fisher Scientific (claudia.bouman@thermofisher.com)

Xiaomei Xu: University of California (xxu@uci.edu)

*****Xiao
mei Xu, Ph.D.

Project Scientist

University of California, Irvine

Department of Earth System Science

2222 Croul Hall

Irvine, CA 92697-3100

Office/Lab: (949) 824-3444

Fax: 949) 824-3874
xxu@uci.edu

3^ο ΣΥΜΠΟΣΙΟ ΑΡΧΑΙΟΛΟΓΙΚΗ ΈΡΕΥΝΑ ΚΑΙ ΝΕΕΣ ΤΕΧΝΟΛΟΓΙΕΣ, ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΕΛΟΠΟΝΝΗΣΟΥ, ΠΑΝΕΠΙΣΤΗΜΙΑΚΗ ΣΧΟΛΗ ΚΑΛΑΜΑΤΑΣ

Τετάρτη, 3 Οκτωβρίου

17:00 - 18:00 Εγγραφή Συνέδρων

18:00 – 18:30 Έναρξη – Χαιρετισμοί,

18:30 – 20:30 Ειδική Θεματική: Εφαρμογές GIS στο Πεδίο
και στη Διαχείριση της Πολιτισμικής Κληρονομιάς

18:30 – 19:00 *Κ. Κωτσάκης, ΓΠΣ και Ψηφιακές Αναπαραστάσεις στην Αρχαιολογία.
Προβληματισμοί Μέσω Ερευνητικών Προγραμμάτων*

19:00 – 19:30 *Α. Σαρρής & S. Dederix, Χρήσεις ΓΠΣ στην Αρχαιολογία και την
Πολιτιστική Κληρονομιά της Ελλάδας: Quo Vadis?* 19:30 – 20:30 Ομιλίες

20:30 Cocktail Υποδοχής Συνέδρων

Πέμπτη, 4 Οκτωβρίου

9:00 – 11:00 Απόλυτες Χρονολογήσεις

9:00 – 9:30 *Ι. Λυριτζής, Χρονολογήσεις με τη Μέθοδο της Ενυδάτωσης Οψιανού:
Πρόσφατα Δεδομένα και Νέες Προοπτικές*

9:30 – 10:00 *Γ. Κίτης, Χρονολογήσεις και Δοσιμετρία Με Τεχνικές Φωταύγειας.
Μια Επισκόπηση της Έρευνας των Νέων Υλικών*

10:00 – 11:00 Ομιλίες

11:00 – 11:30 καφέ

11:30 – 13:30 Γεωφυσικά

11:30 – 12:00 *Γ. Τσόκας Γεωφυσικές Διασκοπήσεις Τύμβων: Μια Επισκόπηση*

12:00 – 12:30 *Γ. Παπαθεοδώρου, Η Μελέτη Πυθμένα και Καταβυθισμένων Ακτογραμμών
στην Ελλάδα*

με Εφαρμογή Γεωφυσικών Μεθόδων. Προεκτάσεις στην Αρχαιολογική Έρευνα

12:30 – 13:30 Ομιλίες

13:30 – 14:30 γεύμα

14:30 – 15:30 Συνεδρία Αφίσας I

15:30 – 17:30 Αρχαιοπεριβάλλον I

15:30–16:00 *Α. Καραλή, Ερευνητικές Προσεγγίσεις & Σύγχρονες Τάσεις
στην Αρχαιο-Περιβαλλοντική Έρευνα*

16:00 – 16:30 *Π. Καρκάνας Επαναπροσδιορισμοί Χρήσης Ταφικών Χώρων Βασισμένες σε
Μικρομορφολογικές Παρατηρήσεις. Προσεγγίσεις από Μυκηναϊκούς Θολωτούς Τάφους*

16:30 – 17:30 Ομιλίες

17:30 – 18:00 καφέ

18:00 – 20:00 Αρχαιοπεριβάλλον II

18:00 – 18:30 *Γ. Θεοδώρου, Η Έρευνα των Απολιθωμάτων στην Γεωαρχαιολογία.
Η Περίπτωση της Μεγαλόπολης στην Αρκαδία*

18:30 – 19:00 *Ε. Φώτου–Jones Οι Γαίες του Αιγαίου. Γεφυρώνοντας τις Έρευνες Πεδίου
και τις Αρχαιομετρικές Προσεγγίσεις στα Υλικά*

19:00 – 20:00 Ομιλίες

Παρασκευή, 5 Οκτωβρίου

9:00 – 11:00 Υλικά Ι

9:00 – 9:30 *I. Κακουλλή, Χρωστικές στην Ελληνιστική και Ρωμαϊκή Χρωματική Παλέτα*

9:30 – 11:00 *Ομιλίες*

11:00 – 11:30 καφέ

11:30 – 13:30 Υλικά ΙΙ

11:30 – 12:00 *B. Κυλίκογλου, Τεχνολογικές Αναζητήσεις στις Μελέτες Αρχαιολογικής Κεραμικής*

12:00 – 12:30 *A. Καρύδας, Μη-Καταστροφικές Αναλυτικές Προσεγγίσεις στην Πολιτισμική Κληρονομιά Εφαρμογές της XRF, και των Ιοντικών Τεχνικών*

12:30 – 13:30 *Ομιλίες*

13:30 – 14:30 γεύμα

14:30 – 15:30 Συνεδρία Αφίσας ΙΙ

15:30 – 17:30 Οργανικά, Συντήρηση

15:30 – 16:00 *E. Ιωακείμογλου, Ταυτοποιήσεις Οργανικών Υλικών στην Συντήρηση και τα Έργα Τέχνης*

16:00 – 16:30 *Γ. Παναγιάρης, Οργανικά Υλικά Ταυτοποιήσεις και Εργασίες Συντήρησης στην Αρχαιολογική Έρευνα*

16:30 – 17:30 *Ομιλίες*

17:30 – 18:00 καφέ

18:00 – 19:30 Αποκατάσταση, Ανάδειξη

18:00 – 18:30 *A. Μοροπούλου, Ολοκληρωμένες Διεργασίες Χαρακτηρισμού και Αποκατάστασης Μνημείων της Πολιτισμικής Κληρονομιάς*

18:30 – 19:30 *Ομιλίες*

19:30 – 20:00 Κλείσιμο

20:00 Επίσημο Δείπνο Συμποσίου

Σάββατο, 6 Οκτωβρίου 09:00 – 10:00 Ξεναγήση στο Αρχαιολογικό Μουσείο Μεσσηνίας

Σάββατο, 6 Οκτωβρίου 11:00–13:00 Ξεναγήση στον Αρχαιολογικό χώρο της Αρχαίας Μεσσήνης

**3RD SYMPOSIUM ARCHAEOLOGICAL
RESEARCH AND NEW TECHNOLOGIES,
UNIVERSITY OF PELOPONNESE, FACULTY
OF HUMANITIES AND CULTURAL STUDIES,
KALAMATA**

Wednesday, 3 October

17:00 - 18:00 Registration hour

18:00 – 18:30 Opening Ceremony

**18:30 – 20:30 Special Session : GIS Applications for Field Archaeology
and Cultural Heritage Management**

18:30 – 19:00 *K. Kotsakis, GIS and Digital Reconstructions in Archaeology:
Considerations*

throughout Research Programs

19:00 – 19:30 *A. Sarris & S. Dederix, GIS for Archaeology and Cultural Heritage
Management in Greece: Quo Vadis?*

19:30 – 20:30 *Oral Presentations*

20:15-22:00 Welcome Cocktail

Thursday, 4 October

9:00 – 11:00 Absolute Dating

9:00 – 9:30 *I. Liritzis, Obsidian Hydration Dating: Current Research and Potential
New Applications*

9:30 – 10:00 *G. Kitis, Luminescence Dating and Dosimetry Studies. An Overview on
the Research
of New Materials*

10:00 – 11:00 *Oral Presentations*

11:00 – 11:30 coffee

11:30 – 13:30 Geoprospection

11:30 – 12:00 *G. Tsokas Geophysical Prospection on Tumuli: An Overview*

12:00 – 12:30 *G. Papatheodorou, Studying Seafloor and Submerged Shorelines
Using Geophysical Methods: Results of Marine Geoarchaeological Research in
Greece*

12:30 – 13:30 *Presentations*

13:30 – 14:30 lunch

14:30 – 15:30 Poster Presentation I

15:30 – 17:30 Archaeoenvironment I

15:30–16:00 *L. Karali, Research Approaches and Modern Trends in Archaeo-
Environmental Studies*

16:00 – 16:30 *P. Karkanias Reconsiderations for Burial Contexts Based on
Micromorphological Research. Approaches for Mycenaean Chamber Tombs*

16:30 – 17:30 *Oral Presentations*

17:30 – 18:00 coffee

18:00 – 20:00 Archaeoenvironment II

18:00 – 18:30 *G. Theodorou Fossils in Geoarchaeology. The Case of Megalopolis at
Arcadia*

18:30 – 19:00 *E. Photos-Jones Earths of the Aegean: Bridging the Gap between
Materials and Landscape Studies*
19:00 – 20:00 *Oral Presentations*

Friday, 5 October

9:00 – 11:00 Materials I

9:00 – 9:30 *I. Kakoulli, Pigments and Colorants in Hellenistic and Roman Painting
Palette*

9:30 – 11:00 *Oral Presentations*

11:00 – 11:30 coffee

11:30 – 13:30 Materials II

11:30 – 12:00 *V. Kilikoglou, Approaches for Technological Studies of Archaeological
Pottery*

12:00 – 12:30 *A. Karydas, Non Destructive Analytical Approaches for Cultural
Heritage:*

XRF and Ion-Beam Analyses

12:30 – 13:30 *Oral Presentations*

13:30 – 14:30 lunch

14:30 – 15:30 Poster Presentation II

15:30 – 17:30 Organics, Conservation

15:30 – 16:00 *E. Ioakimoglou, Identification of Organic Material in Conservation
and Works of Art*

16:00 – 16:30 *G. Panagiaris, Characterisation and Conservation Practices of
Organic Material
in Archaeological Research*

16:30 – 17:30 *Oral Presentations*

17:30 – 18:00 coffee

18:00 – 19:30 Αποκατάσταση, Ανάδειξη

18:00 – 18:30 *A. Moropoulou, Integrated Characterisation and Restoration
Approaches*

for Cultural Heritage Monuments

18:30 – 19:30 *Oral Presentations*

19:30 – 20:00 Closing Ceremony

20:00 Symposium Dinner

Saturday, 6 October, 9:00 - 10:00 Archaeological Museum of Messinia Guided Tour

Saturday, 6 October, 11:00 – 13:00 Ancient Messene Site Guided Tour

ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ –
JOB VACANCIES/FELLOWSHIPS

SENIOR LECTURER/READER IN HUMAN
OSTEOLOGY - UNIVERSITY OF SHEFFIELD
- DEPARTMENT OF ARCHAEOLOGY

Job Reference Number: UOS004778

Closing Date: 31 July 2012

Contract Type: Open-ended

Faculty: Faculty of Arts and Humanities

Location: Main Campus, Northgate House, West Street

Salary: Grade 9 £46,846 - £52,706 per annum with the potential to progress to £61,078 per annum through sustained exceptional contribution

Summary: An exciting opportunity has arisen for a Senior Lecturer/Reader to join the Department of Archaeology. The successful candidate will be part of one of the major Archaeology departments in the UK, with 21 academic staff.

You will be an active and successful researcher and teacher, providing leadership and direction in Human Osteology. You will have a proven ability to capture research income, to develop/participate in research collaborations (nationally and internationally), and to recruit (and supervise) research students. You will assume direction of our highly successful MSc in Human Osteology, and will deliver a range of individual and team-taught modules in addition to playing an active part in the administration and running of the Department (and of the Faculty), and in shaping future research, teaching and outreach strategy.

You will have a PhD in Human Osteology or a related discipline (or equivalent experience), a track-record of research leadership and income capture, experience of PhD supervision, and demonstrable teaching ability at Masters and undergraduate level. You will make a strong individual contribution (at 4* and 3*) to the Department's REF2014 submission and will have experience of strategic-level Departmental/Faculty administration.

To apply for this job please click [here](#) and search for the job using the reference number provided or to view current vacancies and apply online please go to: www.sheffield.ac.uk/jobs.

Please visit the site: <http://www.jobs.ac.uk/job/AES753/senior-lecturer-reader-in-human-osteology/>

CALL FOR TENURE TRACK IN ECOLOGICAL ARCHAEOLOGY AT GHENT UNIVERSITY

Dear Colleagues,

please find enclosed a call from Ghent University for a Tenure Track (professorship) in Ecological Archaeology. Please do not hesitate to spread the news.

Sincerely,

Jean Bourgeois

Prof. dr. Jean Bourgeois
Francqui Professor
Department of Archaeology, Ghent University Sint-Pietersnieuwstraat, 35, B-9000 Gent
<http://www.archaeology.ugent.be/>

2 BOF-positions in various fields

Last application date: 2012-09-07 17:00

Contract: statutair

Occupancy rate: 100%

Vacancy Type: zap

Job description

Ref: SHGW LW02-03

The Faculty of Arts & Philosophy invites applications for two full-time positions of professor in the rank of Lecturer (Tenure Track system), with a focus on scientific research funded by the Special Research Fund (BOF).

The positions will be granted in the following fields:

Environmental Archaeology;
Historical European Literature;
Metahistory;
Systematic musicology (empirical)

A maximum of 1 position will be filled per field.

A full-time position in the rank of Lecturer is a tenure track appointment for a period of five years, at the end of which a tenure decision will be taken, depending on an overall

evaluation. This position is a position focusing primarily on research, with a teaching load limited to no more than 60 teaching hours per semester.

Profile

on the day of application, candidates are required to hold a doctor's degree with a doctoral thesis in the field mentioned or equivalent thereof; candidates are required to have at least two years of postdoctoral experience on February 1, 2013; candidates are required to have research experience in the fields mentioned, as is evident from contributions to international conferences and publications in books and/or peer-reviewed journals; experience in conducting research projects and/or coaching PhD students is recommended; having experience in international mobility, amongst others through participation in research programs at research institutions not linked to the university where the highest degree was obtained, is recommended; candidates are required to possess the necessary didactic, organizational and communicative skills for teaching in an academic context.

No prior knowledge of Dutch is necessary at the time of appointment.

The successful candidate will formally engage to acquire a working knowledge of Dutch within three years of his/her appointment. The official language at Ghent University is Dutch.

Candidates are requested to submit:

an outline (max. 1500 words) explaining their views on research, teaching and service in relation to this vacancy; the required transcripts (copies of degrees).

Selection procedure:

candidates will be short-listed on the basis of their curriculum vitae, bibliography, and the outline; short-listed applicants will be invited for an interview and required to present a micro-class, on the basis of which the final selection will be made.

For further information about this vacancy, applicants are welcome to contact:

Environmental Archaeology: Professor Jean Bourgeois (tel +32 (0)9 331 01 52 of +32 (0)9 331 01 58; Jean.Bourgeois@UGent.be); Historical European

Literature: Professor Gert Buelens (tel +32 (0)9 264 37 00; Gert.Buelens@UGent.be);

Metahistory: Professor Erik Thoen (tel +32 (0)9 331 02 01; Erik.Thoen@UGent.be);

Systematic musicology (empirical): Professor Marc Leman (tel +32 (0)9 264 41 25; Marc.Leman@UGent.be).

Method of application

Applications should be sent in duplicate, and by registered mail to:

The Rector of Ghent University

Rectoraat

Sint-Pietersnieuwstraat 25

B-9000 Ghent

The standard application forms for Autonomous Academic Staff ("ZAP") should be used, with required transcripts (copies of degrees) attached. The applications should also contain an explanation of the main research assignment of the scientific research proposed by the candidate during the Tenure Track position. This "research plan" should comprise at least three and no more than five pages in English, together with an English summary on one page. Applications must be sent no later than September 7, 2012.

Reference to be mentioned in application: SHGW LW02-03

The application forms for Autonomous Academic Staff ("ZAP") can be:

requested at Ghent University, Department of Personnel and Organisation, Sint-Pietersnieuwstraat 25, 9000 Gent; requested via telephone: +32 (0)9 264 95 48 or +32 (0)9 264 31 28; downloaded from the internet:

URL: <http://www.ugent.be/nl/werken/aanwerving/formulieren/zap/tenuretrack.doc/view>

Prof. dr. Jean Bourgeois

Franqui Professor

Department of Archaeology, Ghent University Sint-Pietersnieuwstraat, 35, B-9000 Gent

<http://www.archaeology.ugent.be/>

NEW RESEARCH GRANTS IN MARINE AND MARITIME ARCHAEOLOGY

In its first year of operation, the Honor Frost Foundation is seeking to make awards not exceeding in total £100,000 for marine and maritime archaeology in the Eastern Mediterranean with an emphasis on Lebanon, Syria and Cyprus.

Qualifications - Grants are available to independent scholars, affiliated scholars and institutions, and are intended to support or facilitate research projects covering any period or aspect of maritime archaeology related to the above areas. In the present round it is likely that individual grants will not normally exceed £10,000, which could be the total cost of a piece of work, a contribution to work already in progress, or the cost of a pilot study that might in due course lead to a major research project.

Grants are open to all scholars or institutions with preference to those working in the above named areas. Applications from scholars based in the Eastern Mediterranean will be particularly welcome.

Timeline - Applications should be submitted by 15 October 2012 using the Grant Applications Form on the HFF website (www.honorfrostfoundation.org). The outcome of the awards will be advised in December 2012 by email. Decisions on grant awards are final and no feedback will be given on any applications.

Requirements - Grantees will be required to provide a written report of their work and provide an accounting of expenses. All or part of grantees' reports may be published on the HFF website and possibly in future HFF newsletters.

Future Grants - It is expected there will be another round of applications for grants to be awarded in the financial year 2012-13. It is intended that there will be a regular operating cycle of grants awarded by the Foundation.

From time to time the HFF will consider urgent out of cycle applications on an exceptional basis.

Contact - Please contact the HFF Executive Director at hff@britac.ac.uk with any enquiries.

Honor Frost Foundation, 10 Carlton House Terrace, London SW1Y 5AH, United Kingdom

TERM ASSISTANT IN METAL RESTORATION - CALL FOR APPLICATIONS

I'm searching for a restorer willing to spend 3-4 weeks in Ashgabat (Turkmenistan), to teach a course on conservation and restoration of metals to the restorers working at the Ashgabat National Museum.

The restorer should specialize in the conservation and restoration of ancient metals. The candidate should be graduated (PhD preferred) and have a good working experience on ancient metals (documentable). An elementary knowledge of Russian language is mandatory.

The successful candidate will teach a full time course (Mo-Fr) to a small group of Turkmen restorers. He or she will work on a group of silver and bronze vessels dating from the Bronze Age (BMAC, especially Gonur findings), preserved in the Ashgabat Museum, and instruct on how to work on such materials.

The period when the course should be taught is November; I will be responsible for travel and accommodation; salary will be commensurate to experience.

Please feel free to contact me and send your CV at my email: niccolmanassero@yahoo.it

Niccolò Manassero

**EXZELLENZCLUSTER 264 TOPOI - THE
FORMATION AND TRANSFORMATION OF
SPACE AND KNOWLEDGE IN ANCIENT
CIVILIZATIONS - POSTDOCTORAL
FELLOWSHIP ANNOUNCEMENT (HISTORY
OF SCIENCE)**

A postdoctoral fellowship in Research Group D-1 “Space of Nature: The Exact Sciences of the Cosmos” of Excellence Cluster 264 Topoi is now open to applicants who have obtained exemplary results in their doctoral studies History of Science. Pursuant to DFG guidelines, the fellowship will be awarded for two years and will include a stipend of between 1365 and 1467 euros per month. A child allowance will be made available in accordance with DFG guidelines.

In the research group, whose subject area deals with history of the exact sciences, the recipient should pursue an original research project on history of astronomy or mathematical geography. The project advisor will be Prof. Dr. Gerd Graßhoff (Institut für Philosophy, HU Berlin).

Applications, together with the documents listed below, should be emailed to application@berliner-antike-kolleg.org by August 15. For more information, please visit www.topoi.org und www.berliner-antike-kolleg.org.

Application documents:

- Cover letter (2 - 3 pages)
- Research project synopsis
- Work plan and schedule
- Résumé
- Official copies of degree certificates
- Two letters of recommendation
- Writing sample (15 - 20 pages)

Christine Vögeli-Pakkala
voepakac@cms.hu-berlin.de

ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS

HESPERIA GOES OPEN ACCESS!

In a notice this morning, Andrew Reinhard, Director of [Publications](#) at the [American School of Classical Studies at Athens](#) has made the following important announcement. Andrew Reinhard and his colleagues in the Publications Department and the Publications Committee of the School's Managing Committee are to be congratulated for making this important move.

[Hesperia Provides Open Access to More than 1,500 Articles](#)

07/11/2012

The American School of Classical Studies at Athens (ASCSA) continues its strong commitment to open scholarship by providing easy, free access to past issues of *Hesperia*. The quarterly joins nearly 1,200 other international open access journals in ancient studies as listed in [The Ancient World Online](#). As of July 11th, over 1,500 *Hesperia* articles (1932 to 2009) are available as downloadable PDFs on the ASCSA's [website](#). Through a content-sharing agreement negotiated between the ASCSA and [JSTOR](#), the online host of the journal, all articles beyond the three-year "moving wall" can be freely distributed on the School's website for individual use. This initiative was unanimously endorsed by the Publications Committee of the School's Managing Committee.

"Making *Hesperia* open access helps the journal fulfill the ASCSA's mission of providing resources for scholarly work, and disseminating research," Andrew Reinhard, the ASCSA's Director of Publications, said. "We're providing information on the history and archaeology of the Greek world to as wide an audience as possible. Our content is more readily available to anyone who wants to use it."

Hesperia Editor Tracey Cullen agrees. "It is exciting to be able to offer subscribers and non-subscribers alike nearly the whole run of *Hesperia* on the ASCSA website. In addition to contributing to scholarship in our field, open access to *Hesperia* will draw in new readers and heighten the journal's profile around the world. I'm thrilled."

The webpage is intended primarily for the use of individuals who do not have easy access to JSTOR. Users can find specific articles by using the page's search box that automatically filters the results. Readers can access an article by clicking on its "Download" link and reading on-screen with PDF software (e.g., [Adobe Reader](#)), or they can save the article to a computer, tablet, or other reading device. Online access is not required to read these articles once they have been downloaded, and there is no limit to the number of articles that readers can save for future use.

"Not everyone has JSTOR access and not everyone has an Internet connection in the field," Reinhard said. "Making these articles freely available without requiring an Internet connection or even a subscription should help people have the information they need on whatever device they're using in the trench, camp, and excavation house."

For users with an Internet connection and JSTOR access, ASCSA also hosts a [webpage](#) for browsing issues for each volume year for the full run of *Hesperia*. Readers can search

here by author, title, site, period, or keyword. Clicking on an issue number calls up all articles in that issue. Clicking on an article's title retrieves metadata about that article and a stable link to its home on JSTOR.

The articles on the open access page are free of digital rights management (DRM), but are protected under the Creative Commons [BY-NC license](#) that allows for downloading and sharing articles, and require that the ASCSA and Hesperia be credited as the source. The articles cannot be used for commercial purposes.

Each January another year of *Hesperia* will be made available as open access. The 2010 volume year will be posted online in time for the 2013 AIA/APA joint annual meeting in Seattle.

Questions about open access *Hesperia* can be directed to [Andrew Reinhard](#), Director of Publications.

Please visit the site: <http://ancientworldonline.blogspot.gr/2012/07/hesperia-goes-open-access.html>

ANNOUNCEMENT - RADIOCARBON LABORATORY QUALITY ASSURANCE PROGRAMME (SIRI)

The issue of comparability of measurements (and ultimately bias, accuracy and precision of measurement) is one which has been the focus of some attention both within the ^{14}C community and the wider user communities. The design and organisation for the sixth (SIRI) radiocarbon laboratory inter-comparison is intended to complement and extend previous radiocarbon international quality assurance programmes run successfully by Glasgow University and SUERC, most recently TIRI (1991 – 1995), FIRI (1997 – 2002), and VIRI (2004 – 2008) (Scott 2003; Scott et al, 2010a,b).

The aims and objectives of SIRI are:

- to demonstrate the comparability of routine analyses carried out in radiocarbon laboratories
- to quantify the extent and sources of variation in results
- through choice of material to contribute to the discussion concerning laboratory offsets and error multipliers in the context of IntCal (the International Calibration Programme).
- to gain a better understanding of differences in background derived from a range of infinite age material types

SIRI will be a single stage proficiency trial, lasting approximately 2.5 years. Samples will include a sequence of tree rings, and several background samples suitable for AMS analysis. While it will not be possible to provide the same samples for radiometric laboratories, a small, distinct set of samples will be available for LSC and GPC laboratories.

Samples will be distributed in early 2013.

If you wish to participate or wish further information, please send your contact details to marian.scott@glasgow.ac.uk.

The financial support of English Heritage is gratefully acknowledged.

Marian Scott, Gordon Cook, Phil Naysmith
Glasgow, July 2012

INTERNET SITES

THE SECOND INSTALLMENT OF THE UTARP INFORMATION SYSTEM (UIS)

We are writing to announce the on-line publication of the second installment of the Upper Tigris Archaeological Research Project's Information System (UIS). The Upper Tigris Archaeological Research Project (UTARP), under the direction of Bradley J. Parker (University of Utah), was active in the Upper Tigris River Region of southeastern Turkey between 1998 and 2011. The Utarp Information System (UIS), which was originally designed by Peter Cobb (University of Pennsylvania), aims to be a complete accounting of all of the excavation records as well as all of the records of the subsequent analyses from the Upper Tigris Archaeological Research Project's excavations at the site of Kenan Tepe in southeastern Turkey (www.utarp.org).

The Utarp Information System (UIS) includes records and analyses from Areas A, B, C, D, E, G, H and I. With the publication of these data we can now say that approximately 95% of the data from Kenan Tepe are published. The database includes more than 30,000 photographs, more than 1900 journal entries and more than 43,000 records of contexts and finds. A final installment of the final 5% of the data, which includes issues that remain to be resolved and an accounting of analyses that are still underway, will be forthcoming later this fall. Links to our published work will also be added soon. Published by the Alexandria Archive in Open Context, UIS is free and open to the public. It can be accessed at: <http://opencontext.org/projects/3DE4CD9C-259E-4C14-9B03-8B10454BA66E>

To go directly to the listing of areas and trenches:

<http://opencontext.org/subjects/5D6B6454-017A-43C1-9F15-6DFE36C3558F>

To browse and search records of contexts and finds:

<http://opencontext.org/sets/Turkey/Kenan+Tepe?proj=Kenan+Tepe>

To browse and search images:

<http://opencontext.org/lightbox/Turkey/Kenan+Tepe?proj=Kenan+Tepe>

To browse and search excavation journals and logs:

<http://opencontext.org/search/Turkey/Kenan+Tepe?doctype=document&proj=Kenan+Tepe>

Bradley J. Parker
Peter Cobb
Eric Kansa
Sarah Kansa

DATABASES ABOUT AEGEAN SUBJECTS **(DBAS)**

The DBAS project, the acronym of “Data Bases about Aegean Subjects”, starts in 2005 as a complex research tool for the study of specific themes, regarding the Aegean and the East Mediterranean areas in the pre-classical period, from the idea that a complete statistical analysis of the data of interest could be highly beneficial. Promoted by the University of Florence, this project has contributions by historians, philologists, archaeologists and computer scientists, both from the University of Florence and other Institutions. DBAS is a new kind of on-line consultation tool, a scientific portal organized in three main sections: Data bases for advanced research on specific topics, Bibliographic data bases, Tools and other implements for general research and for educational purposes.

The overall architecture of the web site where the project is hosted shows the merging in a joint system of a number of general features including:

Linking of different data/sets:

archaeological, iconographical, philological data and other records on selected topics will come together in dedicated data bases.

Linking of different data bases:

data bases on close or related matters will be combined to allow for search of chronological, geographical or thematic correlations. To further enlarge the perspective, the data bases will be connected to additional resources available at the site, like downloadable fonts, selected thematic bibliographies, photo galleries, etc...

Linking to different web-sites:

the DBAS structure will ensure, with appropriate tools, the connection to other web-sites offering different materials related to the main research themes developed in this project. This is a particularly relevant feature making DBAS an open structure not only to enlarge its records but mainly to involve other scholars and to improve the scientific quality of the available data.

DataBases

DBAS CHS - Cretan Hieroglyphic Seals

DBAS ACF - The Aegean Collections of the National Archaeological Museum of Florence

Databases in progress

DBAS-AQ Ahhiyawa Question

DBAS-TWC Textile work areas in Bronze Age Crete DBAS-MAE Mycenaeans in the Amarnian Egypt

Bibliographical Databases

The Ahhiyawa Question

Minoan and Mycenaean Bibliographies since 2006 Cretan Hieroglyphic Glyptic
Mycenological publications by scholars of the former Soviet Union Aegean Presence in
Western and Coastal Anatolia during the 2nd Millennium B.C.

Please visit the site: <http://dbas.sciant.unifi.it/mdswitch.html> [Go there for live links]

ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

NEW BRITISH ARCHAEOLOGICAL REPORTS AND OTHER TITLES – JUNE 2012

We are very pleased to list our June 2012 BAR and other releases below. Full details can be seen on our website www.archaeopress.com.

As ever, we appreciate your interest in our publications, and please don't hesitate to contact us.

www.archaeopress.com
bar@archaeopress.com

BAR International Series

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BAR S2380, 2012 Proceedings of the Twelfth Annual Conference of the British Association for Biological Anthropology and Osteoarchaeology Department of Archaeology and Anthropology University of Cambridge 2010 edited by Piers D. Mitchell and Jo Buckberry. ISBN 9781407309705. £32.00

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**CERAMIC FINDS: TYPOLOGICAL AND
TECHNOLOGICAL STUDIES OF THE
POTTERY REMAINS FROM TELL HESBAN
AND VICINITY. HESBAN 11**

edited by James A. Sauer and Larry G. Herr.
2012. xxx + 786 pages, hardbound.
ISBN 978-0-943872-24-7 (Andrews University Press)
\$84.99

Hesban 11 is devoted in part to the typological analysis of the Tall Hisban pottery. It comprises many of the ca. 6000 sherds from the 1971, 1973, 1974, and 1976 excavation seasons at the site. It also provides a technological analysis of more than 200 sherds along with six Iron Age sherds from Tall al-'Umayri, as well as a detailed Instrumental Neutron Activation Analysis of 99 Iron Age sherds from Hisban and 'Umayri.

Using the masterful study of the Hesban pottery begun by Jim Sauer as a starting point Larry Herr and his fellow contributors Yvonne Gerber and Bethany Walker cover the spectrum of Hesban pottery from the Iron Age through the Classical and Islamic periods at the site. The technological studies by Gloria London and Robert Shuster, and Michael Glascock and Hector Neff round out this long awaited volume on the pottery from Tall Hisban.

Orders may be placed at:
Andrews University Press: <http://www.universitypress.andrews.edu>

CURRENT ANTHROPOLOGY 53/4, AUGUST **2012**

Human Innovation and Primate Socialities (Read's How Culture Makes Us Human: Primate Social Evolution and the Formation of Human Societies) How Culture Makes Us Human: Primate Social Evolution and the Formation of Human Societies by Dwight W. Read Review by: Agustín Fuentes

DOI: 10.1086/666620

Current Anthropology August 2012, Vol. 53, No. 4: 513-514.

Bodies, Biotechnologies, and Moral Economies (Edmonds's Pretty Modern: Beauty, Sex, and Plastic Surgery in Brazil, Roberts's God's Laboratory: Assisted Reproduction in the Andes) Pretty Modern: Beauty, Sex, and Plastic Surgery in Brazil by Alexander Edmonds; God's Laboratory: Assisted Reproduction in the Andes by Elizabeth F. S. Roberts Review by: Nancy Scheper-Hughes

DOI: 10.1086/666624

Current Anthropology August 2012, Vol. 53, No. 4: 514-518.

The Devil on the Periphery (Hayes's Holy Harlots: Femininity, Sexuality, and Black Magic in Brazil) Holy Harlots: Femininity, Sexuality, and Black Magic in Brazil by Kelly Hayes Review by: Diana Brown

DOI: 10.1086/666623

Current Anthropology August 2012, Vol. 53, No. 4: 518-520.

How to Wage “Warre” and Influence People (McGovern's Making War in Côte d’Ivoire) Making War in Côte d’Ivoire by Mike McGovern Review by: Andrew Apter

DOI: 10.1086/666621

Current Anthropology August 2012, Vol. 53, No. 4: 520-522.

“Caring for Country”: Aboriginal Stories Strong for the Future (Tranter's Karlu Karlu: Devil's Marbles, Tranter's Crookhat and the Kulunada) Karlu Karlu: Devil's Marbles; Crookhat and the Kulunada Review by: Samia Goudie

DOI: 10.1086/666622

Current Anthropology August 2012, Vol. 53, No. 4: 522-535.

Erratum

Current Anthropology August 2012, Vol. 53, No. 4: 524.

Original Article

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CORPUS OF CYPRIOT ARTEFACTS OF THE EARLY BRONZE AGE PART 4. STUDIES IN MEDITERRANEAN ARCHAEOLOGY VOL. III.4

James R. Stewart, *Corpus of Cypriot Artefacts of the Early Bronze Age Part 4. Studies in Mediterranean Archaeology Vol. III.4*. Edited by Jennifer M. Webb and David Frankel. Åströms Förlag, Uppsala. 2012. xxiv+240 pages, 30 figures, 26 plates.

Fifty years after James Stewart's death in 1962 the publication of this fourth and final volume of his *Corpus of Cypriot Artefacts of the Early Bronze Age* brings to completion a long-running project. Stewart's fundamental contribution to *The Swedish Cyprus Expedition* Volume IV, Part 1A, published in 1962, could provide little more than an illustrated index to his massive Corpus. Following his death, his widow, the late Eve Stewart, together with the late Paul Åström, brought out three of the volumes of supporting data in 1988, 1992 and 1999. This fourth volume fulfils the commitment to the publication of the full Corpus made by Paul Åström. Following Paul's death in 2008, this obligation fell to his son, Dr Lennart Åström, now manager of Åströms förlag, and to Jennifer Webb and David Frankel as Editors-in-Chief of *Studies in Mediterranean Archaeology*. The cost of publication has been partially met by a generous grant from Mrs D.E. Stewart's bequest to the Cyprus American Archaeological Research Institute. Copies can be ordered from Åström Editions at <http://www.astromeditations.com/>.

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ISTHMIA IX: THE ROMAN AND BYZANTINE GRAVES AND HUMAN REMAINS, BY JOSEPH L. RIFE

Hardcover: 500 pages

Publisher: American School of Classical Studies at Athens (June 18, 2012)

Language: English

ISBN-10: 0876619391

ISBN-13: 978-0876619391

\$150.00

at <http://www.amazon.com/Isthmia-IX-Byzantine-Graves-Remains/dp/0876619391>

Rife with Bones

The ASCSA's Director of Publications, Andrew Reinhard, recently interviewed Prof. Joseph L. Rife of Vanderbilt University, author of *The Roman and Byzantine Graves and Human Remains (Isthmia IX)* published in June. Rife had just returned from the field at Kenchreai and discusses his current work there, as well as the challenges and rewards of investigating bones and burials from the Isthmus.

Reinhard: Your book is a mix of archaeology and forensic anthropology. Which came first for you: an interest in the archaeology of Greece, or the study of bones and teeth?

Rife: What first attracted me to Mediterranean antiquity was Greek and Latin literature, and texts remain central to my research. I discovered anthropology as a second major during my undergraduate years at Kenyon College, when I worked with an inspiring teacher of biological anthropology, J. Kenneth Smail, who is now emeritus professor. My interest in archaeology has always been driven by my desire to explore ancient society with multiple sources, both textual and material. *Isthmia IX* exemplifies my perspective of seeing the past whole, through many lenses.

Reinhard: How long have you been working on the graves and human remains at Isthmia? How were you assigned the material? Are there graves and human remains at the site that pre-date the Roman era?

Rife: I first became interested in the burials at Isthmia in 1990, when I helped with a preliminary inventory of the human remains. A few years later I began examining mortuary practices among the site's Roman to Byzantine residents. By 1995, when I was a graduate student at the University of Michigan, Prof. Gregory had kindly invited me to undertake a comprehensive study of the graves that would address both their historical and social contexts and their contents as evidence for skeletal biology. My book owes a great deal to his vision of holistic research, as well as to his unwavering support and sage advice. Prof. Gebhard was also very helpful and generous in contributing for my study the few graves that had been discovered at Isthmia during earlier campaigns by Oscar Broneer. That rounded out the picture of later burial across the ruins of the central area of the Isthmian Sanctuary and the associated fortifications.

Earlier graves are also known at the site. Paul Clement found Late Archaic to Late Classical sarcophagi roughly a kilometer to the west of the Temple of Poseidon; these are rich in artifacts but poor in bones. Needless to say, they represent a very different period in the history of local settlement and their own range of burial customs in another part of the site. When the West Cemetery is published and we can compare it to the late burials covered in Isthmia IX, we will have a small but colorful picture of long-term changes in Corinthian society and ideology, inasmuch as these are reflected in death-rituals.

Reinhard: What was the most interesting thing you found when studying this material?

Rife: There were many surprises big and small. I was taken by the intentionality, the human concern, visible in the graves. Late Roman and Byzantine graves always seem to crop up at Greek sites, but they have often been dismissed as poor or common or haphazard. On the contrary, at the Isthmus I noted the personal care and order that guided their placement and design, even in the details. Also striking was the frequency of purposeful disturbance, the handling or extraction of old bones in late antiquity and beyond. Several features of the skeletal assemblage were interesting or unexpected. I was reminded how taphonomic factors, from soil chemistry to environmental moisture to human activities, can drastically impact the condition of bones and teeth from a single site, and can limit the reach of one's analysis. Even so, the bones and teeth at the Isthmus were in relatively good condition for analysis. And then the discovery of unusual injuries or conditions in any skeletal sample is always fascinating, such as a scapular fracture, a bone tumor, or some pattern of joint disease that shows occupational stress. The discovery of one body that had been awkwardly deposited in a narrow pit made me think in new ways about the conventional limits of Byzantine burial and the treatment of social outcasts.

Reinhard: How is Isthmia IX a new kind of scientific, archaeological publication?

Rife: When I began my study over 15 years ago, apart from a few exceptions, the combination of classical archaeology and physical anthropology was unusual for a site of Roman to Byzantine date in Greece. There really was no monographic precedent. Therefore I adopted a broad approach to discussing my methods, to explaining the significance of the evidence, and to presenting the data in detail—the material is, of course, inherently interesting, but I must frame it so that it is as useful as possible to a wide audience. I like to think that my integrated study of graves, settlement, artifacts, bones, and teeth remains innovative, though more and more work addressing similar evidence has been published in recent years. From my point of view, there is still a need for studies of Greek remains that blend mortuary analysis and bioarchaeology (as the field is now commonly known). In Isthmia IX I also tried to do something new in other respects, such as using interpretative approaches to funerary ritual from the contemporary discourse of the social sciences, and considering ethnographic parallels from modern Greece. And reconstructing ancient society from literary and documentary sources, alongside archaeological and osteological remains, is a serious challenge, because each type of source-material has its own uses and limitations.

But I feel that my study of the buried skeletons has benefitted greatly from my reading of, for example, the Church Fathers and hagiography, just as my understanding of funerary practices has grown from my reading of Corinthian epitaphs.

Reinhard: How does what you found compare with burial and skeletal material from the greater Corinthia, or with other places in Greece?

Rife: The Roman and Byzantine burials and human remains from the Isthmus represent the Corinthian countryside, while most major publications of comparable Greek material have examined urban or semiurban settings. The evidence at the Isthmus provides an especially instructive point of comparison for the city cemeteries at Corinth and other burials in the region, particularly at Kenchreai and in the eastern Corinthia. The burials and skeletons from the Isthmus seem to fit larger behavioral and biological patterns that typify rural communities in the late Greek world: a mixed agricultural subsistence, intimate rituals that place familial connections at center stage, infectious disease in childhood, injuries and sore joints from physical labor, and teeth that break down by middle age. It is striking that in certain respects, so far as we can tell from the published data, the residents of the Corinthian countryside were relatively healthy compared to certain urban contemporaries, such as at Corinth and Constantinople—life in the city wasn't totally better or safer!

Moreover, my comparative study reveals a certain continuity of rituals and burial forms across the northeastern Peloponnese. Within this shared body of behaviors and materials it is interesting to trace local variation, such as in the monumentality or luxury of burial, the use of tombstones and graveside rites, formal heterogeneity, the presence or absence of specific objects, and the pace of change over time. On a basic level there seems to have been a sort of Late Antique funerary *koiné* across the lower Balkans and into Asia Minor that was influenced by various social and ideological factors, including Christianity. But it is on the regional and local scales that we can appreciate the dynamics of ritual and social structure at play, and the impact on individual identities within communities, and on daily life.

Reinhard: Now that your book has been published, what are you working on?

Rife: My ongoing research explores many of the themes I touch on in *Isthmia IX*. I am working with my good colleague Elena Korika of the Hellenic Ministry of Culture toward the publication of our recent excavations at Kenchreai, which uncovered many graves and skeletons, and I am gradually preparing the study of earlier investigations around the Roman harbor. My research on the social and cultural world of the Second Sophistic continues, as I pursue short studies on the Greek novel and biography. And when time permits I turn to inscriptions, most recently a group of epitaphs and dedications of Roman to Early Byzantine date from Kenchreai, together with their parallels from Corinth and elsewhere in the eastern provinces. The variety keeps the material fresh and my mind excited!

[I have this address for Joseph Rife: joseph.l.rife@vanderbilt.edu]

Please visit the site: <http://www.ascsa.edu.gr/index.php/Spiffs/rife-interview>

THE HISTORY OF MATHEMATICAL PROOF **IN ANCIENT TRADITIONS EDITED BY** **KARINE CHEMLA**

CNRS, Paris Cambridge University Press, 2012. 612 pages, 93 illustrations, 29 tables
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This radical, profoundly scholarly book explores the purposes and nature of proof in a range of historical settings. It overturns the view that the first mathematical proofs were in Greek geometry and rested on the logical insights of Aristotle by showing how much of that view is an artefact of nineteenth-century historical scholarship.

It documents the existence of proofs in ancient mathematical writings about numbers and shows that practitioners of mathematics in Mesopotamian, Chinese and Indian cultures knew how to prove the correctness of algorithms, which are much more prominent outside the limited range of surviving classical Greek texts that historians have taken as the paradigm of ancient mathematics. It opens the way to providing the first comprehensive, textually based history of proof.

Table of Contents

Prologue: historiography and history of mathematical proof: a research program - Karine Chemla
Part I. Views on the Historiography of Mathematical Proof:
1. The Euclidean ideal of proof in The Elements and philological uncertainties of Heiberg's edition of the text - Bernard Vitrac
2. Diagrams and arguments in ancient Greek mathematics: lessons drawn from comparisons of the manuscript diagrams with those in modern critical editions - Ken Saito and Nathan Sidoli
3. The texture of Archimedes' arguments: through Heiberg's veil - Reviel Netz
4. John Philoponus and the conformity of mathematical proofs to Aristotelian demonstrations - Orna Harari
5. Contextualising Playfair and Colebrooke on proof and demonstration in the Indian mathematical tradition (1780–1820) - Dhruv Raina
6. Overlooking mathematical justifications in the Sanskrit tradition: the nuanced case of G. F. Thibaut - Agathe Keller
7. The logical Greek versus the imaginative Oriental: on the historiography of 'non-Western' mathematics during the period 1820–1920 - François Charette
Part II. History of Mathematical Proof in Ancient Traditions: The Other Evidence:
8. The pluralism of Greek 'mathematics' - Geoffrey Lloyd
9. Generalizing about polygonal numbers in ancient Greek mathematics - Ian Mueller
10. Reasoning and symbolism in Diophantus: preliminary observations - Reviel Netz
11. Mathematical justification as non-conceptualized practice: the Babylonian example - Jens Høyrup
12. Interpretation of reverse algorithms in several Mesopotamian

texts - Christine Proust 13. Reading proofs in Chinese commentaries: algebraic proofs in an algorithmic context - Karine Chemla 14. Dispelling mathematical doubts: assessing mathematical correctness of algorithms in Bhaskara's commentary on the mathematical chapter of the Aryabhatiya - Agathe Keller 15. Argumentation for state examinations: demonstration in traditional Chinese and Vietnamese mathematics - Alexei Volkov 16. A formal system of the Gougu method – a study on Li Rui's detailed outline of mathematical procedures for the right-angled triangle - Tian Miao

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INTERNATIONAL JOURNAL OF NAUTICAL ARCHAEOLOGY

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A Late Bronze Age Shipwreck with a Metal Cargo from Hishuley Carmel, Israel Ehud Galili, Noel Gale and Baruch Rosen Article first published online: 5 JUL 2012 | DOI: 10.1111/j.1095-9270.2012.00344.x

Abstract

A 13th-century-BC shipwreck site, Hishuley Carmel, is described and discussed. It provides direct evidence for marine transport of copper and tin along the Israeli coast and may indicate inland and maritime trade-routes of metals in the Mediterranean. The shipwreck represents a supply-system providing the demand for bronze in the Levant. Trace-elements and lead-isotope analysis suggest that the copper came from Cyprus, similarly to bun and oxhide ingots from Uluburun. The source of the tin cannot yet be ascertained. The medium-size ship was probably grounded and wrecked during a storm. Some of the cargo may have been salvaged in Antiquity.

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Please visit the site: <http://onlinelibrary.wiley.com/doi/10.1111/j.1095-9270.2012.00344.x/abstract> [Go there for full download]

AN ANCIENT RELATION BETWEEN UNITS OF LENGTH AND VOLUME BASED ON A SPHERE

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Abstract

The modern metric system defines units of volume based on the cube. We propose that the ancient Egyptian system of measuring capacity employed a similar concept, but used the sphere instead. When considered in ancient Egyptian units, the volume of a sphere, whose circumference is one royal cubit, equals half a *hekat*. Using the measurements of large sets of ancient containers as a database, the article demonstrates that this formula was characteristic of Egyptian and Egyptian-related pottery vessels but not of the ceramics of Mesopotamia, which had a different system of measuring length and volume units.

Please visit the site:

<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0033895>

THE AGE OF TITANS: THE RISE AND FALL OF THE GREAT HELLENISTIC NAVIES, WILLIAM M. MURRAY

Bryn Mawr Classical Review 2012.07.30

Onassis Series in Hellenic Culture. Oxford; New York: Oxford University Press, 2012.
Pp. xxvii, 356. ISBN 9780195388640. \$45.00.

Reviewed by Janice J. Gabbert, Wright State University (jan.gabbert@wright.edu)

This book is intended as an examination of the Hellenistic phenomena of big ships, insofar as the evidence allows. It is at least as valuable for its appendices and notes as for the text, since it is thoroughly documented and includes numerous figures, maps, and tables.

The author has a penchant for technical detail and also for statistics, which he knows are not necessarily reliable, although he uses them to the greatest extent possible. The volume contains seven chapters and each will be discussed in turn.

The Introduction, "Understanding the Big Ship Phenomenon," briefly defines the subject and the problems associated with understanding the issue, including the naming of the ships and their configuration.

Chapter 1, "Frontal Ramming and the Development of 'Fours' and 'Fives'" notes the importance of the Athenian siege of Syracuse in 415-413; bigger ships had already been developed by Dionysius I of Syracuse and they became important toward the end of the century, when they were used by both Syracuse and Carthage. Here and elsewhere, Murray emphasizes that these larger ships were primarily useful for ramming other ships and harbor installations, not for boarding or for supporting artillery fire from their decks.

Chapter 2, "Frontal Ramming: Structural Considerations" is a technical discussion of the Athlit Ram, found in 1980 (probably part of a quadrireme) and the remains of Augustus' Victory Monument at Actium, with stone carvings in which ship's rams were apparently placed.

Chapter 3, "The Development of Naval Siege Warfare" is the heart of the book and by far the longest chapter. Murray paraphrases a number of ancient sources and examines the naval activity they describe. He observes that the primary role of an ancient navy was to disrupt the communications and logistics of the besieged. Indeed, this chapter is primarily about siege warfare. Most combat takes place on land. Bigger ships, and more of them, make it more difficult for the besieged to sneak out of the harbor or for reinforcements to sneak in. Artillery could more easily be emplaced on a larger deck, but this was only useful when the ship was in the harbor, near shore.

Chapter 4, "Philo the Byzantine and the Requirements of Naval Siege Warfare" comprises a discussion of Philo (ca. 220 BC), the purpose of his work, and a rough translation and paraphrase of it.

Chapter 5, “Big Ships, Boarding, and Catapults” concludes that the main purpose of the polyremes was ramming; boarding was often unnecessary once the enemy ship had been eliminated from combat.

Artillery might be used against land-based installations when the ship was in the harbor, and was rarely used against other ships.

Chapter 6, “The Culmination of the Big Ship Phenomenon” discusses the evidence and the naming problems, and repeats the earlier assertion that these large vessels were intended as floating siege platforms in a harbor. Bigger was necessarily more expensive, and the truly gigantic ships such as the 40-er designed by Ptolemy III and built by his successor, Ptolemy IV, were designed for show. They demonstrated the wealth of the royal builder.

Chapter 7, “The End of the Big Ship Phenomenon” draws the conclusion that the bigger ships were not necessarily more useful, just more expensive to build and man and, in any case, one needed many ships, including smaller ones, to support the big ships. With the rise of Roman power, the big ships were no longer very useful. Ship to ship combat was never as important as besieging a harbor, and the Hellenistic navies became outmoded.. The Romans built some large ships, mostly fours and fives, but preferred to fight on land, as is well-known.

The six Appendices quote or paraphrase the ancient evidence for all the larger ships and for naval artillery, including the work of Philo of Byzantium.

Those looking for definitive descriptions of the big ships will be disappointed; the evidence is not adequate to be certain of anything, as the author frequently reminds the reader. Indeed, this book does not so much provide answers, as it provides the questions, carefully restated and analyzed. As mentioned at the outset of this review, the text, appendices, and notes are so thorough as to make this a useful reference work.

Please visit the site: <http://bmcr.brynmawr.edu/2012/2012-07-30.html>

WHAT DID THE ROMANS KNOW?: AN INQUIRY INTO SCIENCE AND WORLDMAKING, BY DARYN LEHOUX

Bryn Mawr Classical Review 2012.07.47
Chicago; London: University of Chicago Press, 2012.
Pp. xii, 275. ISBN 9780226471143. \$45.00.

Reviewed by Caroline Bishop, Washington University in St. Louis
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Classics has always been a field in which the tenets of New Criticism come easy; taking the text as completely self-contained can be an especially attractive prospect when the text is almost all that remains of the society in which it was written. At the same time, most of us now accept that literary interpretation acquires great benefit from increased understanding of the cultural, political, material, and even economic forces brought to bear upon a text. Yet there is one aspect of ancient society that the average classicist may still be wary of: ancient science. In this they would not be alone, for the average historian of science may also be wary of the era in which astrology and divination and the four humors represented not just valid, but popularly accepted, scientific theories. Daryn Lehoux's new book presents a welcome challenge to both, demonstrating to classicists just how constitutive ancient science was for the construction of the Roman worldview and to historians and philosophers of science the insight that can be gained from comparing the world of ancient science with our own.

I should note at the outset that I belong more to the former camp than the latter: while I work on ancient intellectual culture, my research focuses on ancient scholarship and literary interpretation. Thus while I am greatly interested in the workings of ancient science, I address this book from the point of view of a classicist seeking a greater understanding of Roman science. Though Lehoux's book seems geared more towards historians and philosophers of science, I do believe it has much to offer classicists as well.

The main goal of the book is to investigate a period of Roman science ranging from the first century BC to the second century AD through a modern theoretical lens. This was a rich era of intellectual innovation, and one that allows the book to range between native Romans such as Cicero, Pliny, and Seneca to Romanized Greeks like Galen and Ptolemy. What Lehoux is interested in showing is "how and why the Romans saw things differently than we do, or . . . how and why they saw different things when they looked at the world." (8) In other words, his goal is to demonstrate how societies make sense of the natural world, and why different societies have seen such different worlds. As a corollary, he strives to show that, just like every society, the Romans thought they had a pretty good idea of how the world is constituted. To a Roman, a world of sympathy and antipathy, of humoral theory and psychic pneuma, made just as much sense as our world of DNA, the Higgs boson, and the theory of relativity.

After an introduction (“The Web of Knowledge”) that lays out his philosophical stance and approach, Lehoux devotes the next three chapters to considering how the Romans linked the natural world to the law in various ways. Cicero, who clearly saw the religious, legal, and political realms as a mirror for (and mirrored by) nature, is a good starting point, and Chapter Two (“Nature, Gods, and Governance”) consequently considers his *De Natura Deorum*, *De Divinatione*, and *De Fato*, focusing primarily on the *Div.* Lehoux makes a good argument for not taking the denial of the efficacy of divination in *Div.* on its face, showing that for Cicero and his contemporaries, divination was an inextricable part of Roman self-identity, religion, and the legitimacy of the political system. Not only that, it was a self-evident component of the natural world, a world whose great order and regularity, when examined by a properly educated person, led to correct ethical behavior. It is at this intersection of ethics, theology, and politics, Lehoux argues, that Roman science is situated.

Chapter Three (“Law in Nature, Nature in Law”) broadens the examination of the link between nature and the law in antiquity, comparing ancient “laws of nature” with our modern understanding of the term. Here Lehoux tackles two different problems: first, what the phrases *leges naturae* and *foedera naturae* meant to someone like Lucretius (who uses both), and why the Roman worldview was congenial to this confluence between nature and the law. Next, he asks why modern historians of science deny Roman scientists an understanding of “laws of nature” in our modern sense, and uses the *Almagest* to successfully demonstrate that Ptolemy shared our concept of “laws of nature”, even if he did not refer to them as such. Finally, in Chapter Four (“Epistemology and Judicial Rhetoric”), Lehoux considers another way the connection between nature and the law manifested itself in Roman thought: observation of the natural world often takes on the trappings of a court case. Using the *Naturales Quaestiones* as his main source (compared and contrasted with Lucretius), he considers how the “declamatory” nature of Seneca’s work turns judicial rhetoric into an epistemological tool for science. In this way, Roman observation of natural phenomena becomes not just “theory-laden” (i.e., the phenomenon in which our observations are predetermined by our theories) but also ethically-laden: the Roman eyewitness to natural phenomena is like the eyewitness in an ancient court case, whose moral character forms the main basis for his trustworthiness.

The book’s remaining chapters are more discrete, though some linkages can be found. For example, the next two chapters hinge on the problematic nature of scientific observation. Chapter Five (“The Embeddedness of Seeing”) considers Ptolemy and Galen’s response to the potential threat to empiricism posed by Pyrrhonian Skeptics, who distrusted all sense perception. Both Galen and Ptolemy offer complex theories of the mechanism of sight—Ptolemy from the point of view of mathematical optics, Galen from a physiological standpoint—that guarantee its accuracy in representing a truthful portrait of the world. Ironically, Lehoux shows, these theories rely on blind spots caused by epistemological and ontological biases. Empiricism, in other words, is not the guarantor of accuracy that we think it is. Chapter Six (“The Trouble with Taxa”), which is particularly engaging, builds on this conclusion, looking at the phenomenon of paradoxography in ancient science. This is often a major sticking point for the study of ancient science: how could so many great minds have believed in things that to us seem so patently absurd? What Lehoux shows is that when we ask this question, we must also ask a corollary: why is it that we think they’re so absurd? He takes as his main example the implausible ancient belief that garlic rubbed on magnets takes away their power of attraction and repulsion. For an ancient thinker, garlic and magnets belong to a

taxonomic system (sympathy and antipathy) in which they are fundamentally opposed, and as he shows, anyone raised to look at the world in this way needn't run an experiment to prove that garlic has this effect on magnets; he simply knows that it's true. In the same way, we, who slot them into a different taxonomic system (magnets in the class of magnetism, and garlic . . . somewhere else entirely) needn't perform an experiment to prove that this is decidedly not true. In other words, many of the things we confidently assert as provably and empirically true are, in fact, determined by the theoretical contexts in which we operate. It is for this reason, Lehoux concludes, that we should take seriously the many claims of ancient science that we find ridiculous: after all, they rest on the same epistemological foundations as our own scientific claims.

The following two chapters are only loosely connected, though each considers further the way the notion of sympathy, broadly defined, made its mark on ancient scientific theory. Chapter Seven ("The Long Reach of Ontology"), in my opinion the weakest in the book, looks at the role astrology had on the ontology of the Roman world, and how it shaped theories of free will and determinism. Lehoux ranges widely here, looking at authors as diverse as Ptolemy (the *Tetrabiblos*), Sextus Empiricus, Geminus, Manilius, and Firmicus Maternus, but never in any great detail. His main point seems to be that just as we believe physics to be inarguably true, so the Romans had good reason for believing astrology was both highly rational and manifestly empirical. Chapter Eight ("Dreams of a Final Theory") then considers how symmetry (the belief that parts of the universe—whether physical, ethical, theological, or psychological—can also explain other parts) made its mark on the Roman world. To illustrate just how far-reaching symmetry was as a heuristic tool, Lehoux demonstrates its role in Cicero's *Dream of Scipio*, Macrobius' commentary on the work, and Ptolemy's fascinating treatise *Harmonics*; for the Romans, the notion of cosmic harmony (understood numerically) becomes a sort of "final theory", explaining almost everything in the world.

The final two chapters, followed by a short conclusion, pull back from specific evidence and consider the theoretical implications of these findings. On the one hand, Lehoux has shown convincingly just how much science—both the Romans' and our own—depends on our epistemological and ontological settings, which may lead us to wonder if all science is relative. On the other hand, most of us implicitly assume that there is some "real world" out there and that we can attain reasonably certain knowledge of it. Chapter Nine ("Of Miracles and Mistaken Theories") provides an extremely lucid and compelling account of the strengths and weaknesses of these two opposed positions—realism versus relativism—before ultimately concluding that both have their merits.

The upshot, Lehoux says, is that we must assume people are justified in believing their scientific theories are (approximately) true of the world. Chapter Ten ("Worlds Given, Worlds Made") further clarifies this position, arguing for a pragmatist theory of truth (truth must be verifiable and testable) coupled with a coherentist epistemology (all the interlocking parts that make up our systems of understanding the world must cohere). In wedding these two notions, Lehoux believes we can "give Roman investigations into nature their due as sophisticated and interesting epistemic projects" (244) without assuming that the light this throws on the contingent and culturally specific nature of all science means that we cannot know for certain that we are right about, e.g., magnetism, and that the Romans were wrong about sympathy and antipathy.

This is a thought-provoking book, and I think in its broad strokes it is successful; Lehoux demonstrates to my satisfaction both that all science is socially constructed to a degree and that we should take every society's science seriously, because they certainly did. This is a fine line to walk, but Lehoux accomplishes it well. On the other hand, when he considers specific examples of how Roman science was constructed, his emphasis on theory can come at the expense of context. I can understand why he did not feel the need to extensively explain the current state of, e.g., astronomy at the time Ptolemy was writing, but some brief contextualization of his authors' scientific fields, their place within them, and a general overview of the thrust of the primary sources that he draws from would have been welcome.

This goes hand in hand with another problem, which is that at times the book suffers from a lack of cohesion, both in the construction of individual chapters and in their relationship to one another. It can also be a challenging read if one is not already familiar with Lehoux's theoretical terminology. This is not to say it is not a worthy endeavor for anyone with an interest in the topic, because I think it is. It certainly gave me a new and profound respect for the world of Roman science, and for those who practiced it.

Please visit the site: <http://bmcr.brynmawr.edu/2012/2012-07-47.html>

EΙΔΗΣΕΙΣ - NEWS RELEASE

UNEXPECTED BEAUTY AND UNANSWERED RIDDLES FROM A DESERT CAVE - LOOKING FOR DEAD SEA SCROLLS IN THE DESERT IN 1961, A TEAM CAME UPON A TREASURE HIDDEN 6,500 YEARS BEFORE BY MATTI FRIEDMAN

The latest in a series looking at history through a single object in the archaeology collections at the Israel Museum. In April, 1961, a small group of Israeli archaeologists were in a cave high above a dry riverbed in the Judean Desert. They were looking for Dead Sea scrolls.

The archaeologists were part of an expedition made up of several teams searching for ancient Jewish texts like those found at nearby Qumran — a mission deemed so important to the young state of Israel that the government had put soldiers and military helicopters at their disposal. One photograph of the time shows the expedition leaders, including the famed archaeologist Yigael Yadin and a uniformed general, conferring in a tent by the light of a lantern, plotting the digs like a military operation.

The team in this particular cave was led by Pessah Bar Adon, a grizzled pipe-smoker who had previously spent time living with Bedouin tribesmen in the Negev. More prominent archaeologists on the expedition had been given more promising sites to explore than this one, nearly inaccessible on one of the steep sides of Wadi Mishmar.

The diggers, who were bivouacked in army tents on a plateau above the riverbed, had roped down the perilous cliff face into the cave mouth. Deep in the cave, a large boulder blocked the way. They pried it out and watched as it plunged 100 yards to the floor of the riverbed.

They found no scrolls. Instead, wrapped in a straw mat, they found 429 objects that someone had hidden 6,500 years ago — one of the greatest prehistoric treasure troves that has ever come to light and a find that altered our understanding of the lives and culture of some of Israel's ancient residents.

The artifact pictured here, one item from the hoard, is a mace head that scholars believe would have been mounted on a wooden pole and perhaps used in a religious ritual. It depicts an exquisite double ibex, inspired by the horned creatures whose descendants still roam the same area today. It is made of a kind of copper that includes traces of antimony and arsenic and is almost certainly not local.

The hoard, much of which is on display in a glass case in one of the prehistory galleries at the Israel Museum, includes scepters, statuettes, horn-shaped pieces of carved ivory

pocked with dozens of round holes, copper orbs and other mysterious items whose purpose has been lost to time.

The double ibex was made using a complicated wax and ceramic mold. The copper appears to have been imported from eastern Turkey or the Caucasus.

The object, and the others found with it, made it clear that the local civilization of the time was far more sophisticated than had previously been thought.

The residents of Israel around 4,500 B.C.E., the Chalcolithic period, lived in a society that had irrigated fields, domesticated grapes and wheat. They had begun to make dairy products, like cheese. They buried their dead in small clay ossuaries, some of them shaped like fanciful human figures.

They predated recorded history by more than 1,000 years, so little more is known about them. The Israelites are thought to have arrived in the land of Canaan more than three millennia later.

The key to understanding the trove, scholars believe, might lie eight kilometers to the north, at the desert oasis of Ein Gedi, where archaeologists have uncovered a Chalcolithic-era temple. According to this theory, the temple priests spirited their ritual objects from the sanctuary at a time of danger and hid them in a place where they thought they would never be found. They were almost right.

“At 2 p.m. on the eighth day of our work in the cave, one of the students, Ruth Pecherski, and one of the soldiers, Freddy Halperin, came upon the top of a sloping stone covering a natural niche in the northern wall of chamber B,” wrote Bar Adon, the team leader, in his log of the 1961 dig. The removal of the large boulder had allowed the team to reach the back of the cave.

“This covering stone was flawed at the edges, so that at the very first glance several metal objects could be seen glinting through the cracks. We at once set about clearing away the loose earth all around the stone, until the whole of it was exposed. Then darkness forced us to stop working for the night. Early the next morning we started to lay bare the hoard,” he wrote.

The trove from the cave – which has come to be called the “Cave of the Treasure” – is fascinating because it poses at least as many questions as it answers, said Osnat Misch-Brandl, the museum curator in charge of Chalcolithic artifacts.

“There are hundreds of metal objects, and though metal seems simple to us, then it was precious,” she said. “How did people so long ago make these objects, and why did they make such an effort to take this whole load and bury it in a hole at the end of the world? And why make these beautiful things in the first place? Who were these people? And what did they look like? “Looking at these objects, we want to know all of these things — these people were our ancestors, after all,” she said.

Please visit the site: <http://www.timesofisrael.com/unexpected-beauty-and-unanswered-riddles-from-a-desert-cave/> [Go there for pix]

EGYPT'S SPHINX, PYRAMIDS THREATENED **BY GROUNDWATER, HYDROLOGISTS** **WARN, BY NEVINE EL-AREF**

New water pumping system at Giza Plateau has ecologists worried about possible damage to Egypt's best-known historical monuments

One month ago, Giza's antiquities inspectorate installed a new system to pump subterranean water out from under Egypt's historical Sphinx monument and the underlying bedrock.

Subterranean water levels at the Giza Plateau, especially the area under the valley temples and Sphinx, have recently increased due to a new drainage system installed in the neighbouring village of Nazlet Al-Seman and the irrigation techniques used to cultivate the nearby residential area of Hadaeq Al-Ahram.

The system involves 18 state-of-the-art water pumps capable of pumping 26,000 cubic metres of water daily.

The project, which cost some LE22 million and is financed by USAID, has raised fears among some hydrologists and ecologists that it could erode the bedrock under the Sphinx and lead to the historic monument's collapse.

Kamal Oda, professor of hydrology at Suez Canal University, told Ahram Online that, according to a report by Egypt's Ministry of State for Antiquities, the machines will pump some 9.6 million cubic metres a year of water at a depth of 100 metres beneath the Sphinx. This, he warned, could cause a drop in the ground level and increase the risk of erosion and collapse of both the Sphinx and the nearby great Pyramids of Giza.

Ali El-Asfar, director of Giza Plateau antiquities, for his part, challenged Oda's assertion. He said that the pumping machines would stop automatically when subterranean water levels reached 15.5 metres above sea level.

El-Asfar told Ahram Online that the Sphinx, the Great Pyramids and the plateau's valley temples were "completely safe," since water levels underneath them had reached 4.6 metres below ground level – the same levels seen in ancient times.

"Such levels are natural," said Minister of State for Antiquities Mohamed Ibrahim. He went on to point out that the Nile River had once reached the plateau, where a harbour had been dug for the boats transporting stone blocks for the as-yet-unbuilt pyramids from faraway quarries in Aswan and Tora.

Please visit the site:

<http://english.ahram.org.eg/NewsContent/9/40/46972/Heritage/Ancient-Egypt/Egypt-Sphinx,-Pyramids-threatened-by-groundwater.aspx>

FORGOTTEN CULTURAL TREASURES OF SIDON'S PAST

Excavations led by a delegation from the British Museum at the Frères' archaeological site in the old city of Sidon unearthed more important antiquities during their 14th year, it was revealed Tuesday.

Preparations also got under way for the construction of a museum to display the findings at the site. The construction is due to begin in September.

Discoveries at the site since excavations began in 1998 have revealed artifacts from the Early Bronze Age, which began around 3,000 B.C., through to the Iron Age, which covered around 1,200-539 B.C.

Among the latest discoveries was a particular type of Phoenician architecture, which the archaeologists said was not commonly found in Lebanon, consisting of stones cut for the construction of walls or floors.

Over 50 amphorae were also found, as well as a stunning Attic vase, depicting two riders going to war wearing white tunics and holding spears.

Excavations also turned up further graves in addition to those found in previous years, dating to the second millennium, bringing the total number of graves found at the site to 122. Among the latest discoveries was a Mesopotamian-style cylinder seal, which was used to roll pictures onto surfaces, featuring the God of water and the Goddess Lama.

Archaeologists also found further evidence that shelters were constructed at the time of burial, and food such as lentils, chickpeas and beans were consumed. Among the findings this year were a platform used around 1,600 B.C. within a large temple built for burial ceremonies.

Also among the discoveries in Sidon was a coin depicting the legend of Europa, a Phoenician woman who was abducted by Zeus disguised as a white bull and taken to Crete, increasing speculation that Europa may have been a Sidonian.

The importance of the discoveries at the site prompted the director of the Middle Eastern branch of the British Museum, Jonathan Tubb, to travel to Lebanon, where he resided in Sidon for several days to supervise the excavation works taking place.

Tubb said that the site is the only one in the Middle East that the British Museum is currently excavating.

“[These discoveries] increase understanding of the complicated stages of Sidon's history and make them clearer,” Tubb said. “We are very interested in knowing the complete story of Sidon, its history and the history of its civilizations, which no one has achieved so far.”

The head of the British Museum delegation in Lebanon, Claude Doumit Serhal, said the Frères' site "can now summarize the history of Sidon and of the civilizations that lived there for 6,000 years, and also removes the mystery of some stages that were missing from Sidon's history."

The excavation works, which are supported by the British Museum, the Hariri Foundation for Sustainable Human Development and Cimenterie National SAL, focused this year on the north of the site, where work will begin later this year for a museum to display the findings.

Serhal said the museum would add significant value to the work done on the Sidon site.

"Of equal importance to the archaeological discoveries is having them available to the public because culture that cannot spread among people is not culture," Serhal said.

One pillar of the museum will be placed in one of the excavation rooms, dating to the third millennium B.C. Excavation work was therefore speeded up in this area.

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Please visit the site: <http://dailystar.com.lb/News/Local-News/2012/Jul-04/179284-excavations-reveal-the-forgotten-cultural-treasures-of-sidons-past.ashx#axzz1zd9xf9sL>

A BONE HERE, A BEAD THERE: ON THE TRAIL OF HUMAN ORIGINS, BY JOHN NOBLE WILFORD

Who are we, and where did we come from? Scientists studying the origin of modern humans, *Homo sapiens*, keep reaching deeper in time to answer those questions — toward the last common ancestor of great apes and humans, then forward to the emergence of people more and more like us in body and behavior.

Their research is advancing on three fronts. Fossils of skulls and bones expose anatomical changes. Genetics reveals the timing and place of the Eve of modern humans.

And archaeology turns up ancient artifacts reflecting abstract and creative thought, and a growing self-awareness. Just last month, researchers made the startling announcement that Stone Age paintings in Spanish caves were much older than previously thought, from a time when Neanderthals were still alive.

To help make sense of this cascade of new information, a leading authority on modern human evolution — the British paleoanthropologist Chris Stringer — recently sat for an interview in New York that ranged across many recent developments: the evidence of interbreeding between Neanderthals and *Homo sapiens*; the puzzling extinct species of little people nicknamed the hobbits; and the implications of a girl's 40,000-year-old pinkie finger found in a Siberian cave.

Dr. Stringer, an animated man of 64, is an anthropologist at the Natural History Museum in London and a fellow of the Royal Society. But he belies the image of a don: He showed up for our interview wearing a T-shirt and jeans, looking as if he had just come in from the field.

A condensed and edited version of our conversation follows. In it and in a new book, he describes a new wrinkle to the hypothesis of a recent African origin of modern *Homo sapiens*. His ideas may light up more debate in a contentious science.

First of all, would you explain the title of your new book?

Yes, the title is “Lone Survivors: How We Came to Be the Only Humans on Earth.” And this comes from the fact that if we went back 100,000 years, which is very recent, geologically speaking, there might have been as many as six different kinds of humans on the earth. All those other kinds have disappeared, and left us as the sole survivors.

You wrote that in 1970, when you started doing research in this field, the origin of modern humans was hardly recognized as a topic worthy of study in science. What has changed since then?

It's been a fantastic time to be involved in the field, and even when I was writing this book in the last two years, I had to regularly go back and rewrite things I thought I'd finished with, because new developments were coming up all the time. In 1970, for some

people, there was no single origin of modern humans: We evolved globally, all over the world. There was a view that in the different regions an earlier species, *Homo erectus*, evolved relatively seamlessly to modern humans. This idea was known as multiregionalism.

The argument went that we remained one species throughout that evolutionary process, because there was interbreeding among the different populations. It meant that the Neanderthals in Europe, for example, would be the ancestors of modern Europeans; *Homo erectus* in China would be the ancestor of modern Asians. And Java Man would be a distant ancestor of modern Australian aboriginal populations.

What we have seen since then is a growth in the fossil record, in our ability to date that record and to CT-scan fossils and get minute details out of them. DNA studies have had a huge impact on our field. We now have the genomes of Neanderthals and of these strange people in Siberia called the Denisovans.

Speaking of DNA, what about the African Eve? This established an approximate date for the genetic origin of modern humans, in Africa. As a leading advocate of the recent African origin, in contrast to the multiregional model, did you believe this settled the debate?

To be honest, it's not been totally resolved, but the Mitochondrial Eve publication of 1987 was a key moment. Up to then, a few of us were arguing for a recent African origin from the fossil and archaeological evidence. But the evidence was pretty skimpy, and the majority opinion was against our view.

When this new genetic technique appeared, it seemed to give clarity to the picture. Here was an independent bit of data, from our mitochondrial DNA, inherited through females, suggesting we originated, all of us, all over the world, from a single ancestral population that lived in Africa maybe 200,000 years ago.

I came to this conclusion gradually, starting with the Neanderthals. They were the best-known ancient humans, and there was a view that they were our ancestors. I tested that model in my Ph.D. research, and I concluded the Neanderthals did not make good ancestors of modern humans, even in Europe, where we had the best data. So gradually my search moved from one region to another, to see where the evidence best fitted the idea of our origins.

It turned out that Africa was the place that had the oldest fossils of modern humans. Africa, for me, was the only place that showed a transition from archaic to modern humans.

In your book you propose that there was not one place in Africa where modern humans originated.

Earlier, influenced by the mitochondrial DNA data, I felt there was one place in Africa, a sort of garden of Eden, where we evolved, where we changed behaviorally and physically to become modern humans.

But the story is much more complicated. Even the DNA data show that essentially each of our genes has a separate evolutionary history. And so, when you look at the total picture, including the fossil data and archaeological data, there is no single spot in Africa that seems to be the place for our origins genetically.

The story is dominated by East Africa, because that's the area that has the best preservation of the fossil record. You could say southern Africa is giving scientists the best record of behavioral evolution. They are finding evidence pretty early of processing marine resources, the use of red ocher for symbolic purposes, self-adornment with shell beads.

In my view, different parts of Africa were important at different times, to distinct human species, and this was being controlled by the climate. Africa is a huge place influenced by many different factors: the Mediterranean, the North Atlantic, the South Atlantic, the Southern Ocean, the monsoons coming off the Indian Ocean. At different times this would have produced good areas for humans and bad areas.

Populations in different areas would have flourished briefly, developed new ideas, and then maybe those populations could have died out, even — but not before exchanging genes, tools and behavioral strategies. This kept happening until we get to within the last 100,000 years, and then finally we start to see the modern pattern behaviorally and physically coalescing from these different regions to become what we call modern humans by about 60,000 years ago.

Previously, the splendid cave art of Europe influenced the view that modern behavior began there some 40,000 years ago. How firm is the new interpretation that Homo sapiens developed modern behavior as well as modern anatomy in Africa?

There were remarkable things happening in Europe at least 40,000 years ago, with the painted caves, with flutes, with the statuettes and so on. But the seeds of that revolution were sown in Africa more than 100,000 years ago. I would argue that when modern humans came out of Africa, say 60,000 years ago, fundamentally they were behaviorally modern. They took that into Europe. They took that into Asia and into Australia. So there was no single revolutionary event in Europe; this was something that was in modern humans when they came out of Africa, and the ones who stayed behind as well.

How does the discovery in Indonesia, on the island of Flores, fit in with current thinking about human migrations and lineage? Are the so-called hobbits really members of our genus Homo?

The hobbit, Homo floresiensis, is a really challenging find for everyone. There's still a minority of scientists who don't accept that it is a distinct human species; it's some kind of a weird, maybe diseased form of modern human. But I think it is a genuine distinct form, and actually a very primitive form.

It's either derived from a very primitive form of Homo erectus, maybe similar to the ones at Dmanisi in the Republic of Georgia, or it's evidence of an earlier Africa exit, maybe before two million years ago, by something that's pre-erectus that somehow got all the way over to the Far East and survived there in isolation, evolving for more than a million

years. It's an extraordinary story, if that's true. And again, further evidence of how little we know about much of Asia in terms of this story.

The more you learn, the more fascinating the subject becomes.

Absolutely, and that's how I found it right through my career.

In your earlier career, you concentrated on Neanderthals. Do you now accept the new evidence of Neanderthal-Homo sapiens interbreeding, which seems to establish that we are more than 2 percent Neanderthal?

This is one of the remarkable bits of news of the last couple of years. We've had the genomes of Neanderthals reconstructed, and yes, indeed, it shows that people outside of Africa have, on average, about 2.5 percent of an input of Neanderthal DNA in them. And, of course, it's led to a rethinking of our relationship with them; clearly there was viable interbreeding.

We don't know the circumstances. Maybe a parsimonious view is that there was a single interbreeding period when modern humans came out of Africa. They met some Neanderthals in the Middle East. There was some interbreeding, under circumstances we don't know yet, and that input of Neanderthal DNA was then transferred as those populations spread to Europe and to China, down to New Guinea, into the Americas; they took that bit of Neanderthal with them.

Archaeologists have found evidence that Neanderthals and Homo sapiens occupied the same caves in Israel. Could this have been an interbreeding contact?

Western Asia becomes a critical area for this possibility of interbreeding. It could have been 25 Neanderthals mixing with 1,000 modern humans. It doesn't have to be a lot of Neanderthals, but clearly there might have been interbreeding somewhere like Israel or Lebanon or Syria — all possible places where we know Neanderthals lived, and at times modern humans also lived.

There's also a view that the interbreeding was more widespread, but that either cultural or physiological factors limited the successful births. For example, we know that the pelvic shape of Neanderthal females is different from the pelvic shape of modern human females. If a modern human female was giving birth to a hybrid baby, part Neanderthal, could there have been obstetric problems? We don't know the circumstances of these encounters: if it was a peaceful mixing and merging of these people, or if the circumstances were violent.

Just who were the Denisovans?

It's an extraordinary discovery. Two or three years ago I vaguely knew there was an archaeological site in Siberia called Denisova Cave. And then a few teeth, a finger bone have produced a really high-quality genome now that's posted on the Web site of the Max Planck Institute for Evolutionary Biology in Leipzig, Germany. The preservation of the DNA is exceptional, and well beyond anything we have from Neanderthals. It seems these Denisovans were related to the Neanderthals, an early branch off the Neanderthal line.

We know a lot about the Denisovans genetically, but physically we know very little about them. These fossils are so fragmentary. The even more remarkable thing is they are only known from one site in Siberia, and their DNA turns up in people only in really one region today — not in Siberia, or Asia, but down in Australia and New Guinea. That's extraordinary.

This is difficult to explain, because we thought that the ancestors of the Australian Aborigines and New Guineans must have got to their regions through southern Asia. Somewhere in Southeast Asia is the most likely place they would have had interbreeding with the Denisovans. That also implies the Denisovans were not just in Siberia; they must have been a widespread group.

This raises one more question: Could we ever clone these extinct people?

Science is moving on so fast. The first bit of Neanderthal mitochondrial DNA was recovered in 1997. No one then could have believed that 10 years later we might have most of the genome. And a few years after that, we'd have whole Denisovan and Neanderthal genomes available. So no one would have thought cloning was a possibility. Now, at least theoretically, if someone had enough money, and I'd say stupidity, to do it, you could cut and paste those Denisovan mutations into a modern human genome, and then implant that into an egg and then grow a Denisovan.

I think it would be completely unethical to do anything like that, but unfortunately someone with enough money, and vanity and arrogance, might attempt it one day. These creatures lived in the past in their own environments, in their own social groups. Bringing isolated individuals back, for our own curiosity or arrogant purposes, would be completely wrong.

In the introduction to your book, you list the kinds of questions you're always getting from people. One of them will be the closing question: What is the future of human evolution?

That's a tough one to answer. There's a lot of data, not my research, but mainly geneticists have been working on this, and they've showed just how many genetic changes there have been in the last few thousand years in the human genome. And this is because we've undergone great changes with urbanization, with agriculture, very big changes in lifestyles. And this has influenced our genetic makeup as much as living in the Paleolithic had done. We've seen, if anything, an acceleration of genetic changes in humans due to these lifestyle changes. So, I think human evolution has been going on quite rapidly recently, and it's going to carry on.

Not everyone agrees. My colleague in London, Steve Jones, has argued essentially that evolution has stopped in humans because we are in control of it. We have medical care. Nearly everyone reaches reproductive age. Everyone has enough food and water. So natural selection has been nullified in humans. I disagree with him because, of course, there are still a lot of people in the world who don't have the best medical care, who don't have enough food and water. Think of the impact of AIDS in Africa.

So selection is still operating on many human populations just as much as it ever has done, really. Also, all of us probably have 50 mutations in our DNA compared with our parents. So that's going on every generation as well. We are still evolving. We will continue to evolve.

Please visit the site: <http://www.nytimes.com/2012/07/17/science/chris-stringer-on-the-origins-and-rise-of-modern-humans.html>

THE CRUSADERS' LAST STAND: POT OF GOLD WORTH £300,000 FOUND IN FORTRESS WHERE IT WAS BURIED BY DOOMED FORCE OF CHRISTIAN KNIGHT, BY ROB WAUGH

A pot of gold from the Crusades worth up to \$500,000 has been found buried in an ancient Roman fortress in Israel.

The coins were buried by Christian soldiers of the order of the Knights Hospitalier as the Crusaders faced an unstoppable attack by a huge Muslim army.

The knights were annihilated in April 1265.

The coins - worth a fortune even in 1265 when they were thought to have been buried - were deliberately hidden inside a broken jug to prevent them being discovered.

The fortress was destroyed in April 1265 by forces of Mamluks who overwhelmed the Crusaders - and the treasure only survived due to the quick thinking of one of the defenders.

'It was in a small juglet, and it was partly broken,' Oren Tal of the University of Tel Aviv told Fox News.

'The idea was to put something broken in the ground and fill it with sand, in order to hide the gold coins within. If by chance somebody were to find the juglet, he won't excavate it, he won't look inside it to find the gold coins. Once we started to sift it, the gold came out.'

The Roman fortress in Apollonia National Park has yielded a huge number of archaeological treasures - but scientists excavating layer from the thirteenth century were stunned to unearth a literal pot of gold.

The clay container had more than 100 gold dinars from the time when the Crusaders occupied the fortress, originally built by the Romans.

The coins discovered in the fort date to the Fatimid empire in northern Africa, and are 200-300 years older than the ruined fortress they found in.

The coins were minted in Tripoli and Alexandria - and are extremely valuable.

'Fatimid coins are very difficult to study,' says Oren Tal, 'The letters are sometimes very difficult to decipher.'

The coins can sell for up to \$5,000 apiece, according to Israel's Haaretz newspaper.

The excavations are offering a unique insight into Crusader fortifications in the Middle East.

The layer of Crusader artifacts has lain nearly undisturbed since 1265. Muslim Arsuf was conquered by the Crusaders in 1101 and re-conquered by the Mamluks in 1265.

The presence of the Crusaders left its mark on the town.

Large parts of it were re-planned, while extensive fortifications, private and public buildings, as well as a castle were erected.

The town's abandonment after its Mamluk destruction led to a unique archaeological setting in which the Crusader layers were left largely undisturbed by later settlement activities.

Please visit the site: <http://www.dailymail.co.uk/sciencetech/article-2171883/Treasure-Crusaders-stand-Pot-gold-worth-300-000-fortress-buried-doomed-Christian-knights.html>

TWO ANCIENT SITES TO GET A BOOST

The palace complex of Knossos receives around 1 million visitors a year, though most don't know that there is much more to see at the Minoan site.

The organization in charge of an ambitious plan to overhaul the Greek capital's image as an archaeological destination has offered its expertise to help promote the archaeological site of Knossos on Crete.

The Unification of the Archaeological Sites of Athens said on Friday that it will be coordinating an international competition for zoning proposals on how best to open up the entire site of the Bronze Age center of the Minoan civilization to visitors, who are currently restricted mainly to the palace complex and are unable to see other antiquities on the site.

“The archaeological site of Knossos is the second most visited site in Greece” with an average of 1 million visitors a year, said UASA president Dora Galani. “It is extremely rich in findings and is spread over a large expanse, characteristics that have not been fully maximized as tourists only visit the palace complex. At a short distance from the palace though, there are a lot of interesting monuments, which most people are ignorant of.”

Proposals for the tender are expected to be submitted to the Ministry of Culture by the end of the year.

Meanwhile, in northern Greece, the Neolithic lakeshore settlement of Dispilio in Kastoria is to receive an injection of European Union funding for the restoration of its outer fortifications at a time when state resources for archaeological projects have all but dried up.

Funds worth 650,000 euros will be channeled via the National Strategic Reference Framework in what is the third of a total of four projects at the site. The restoration of the fortifications follows the reconstruction of a scene from daily life during Neolithic times at the settlement, as well as the creation of an area to teach excavation techniques to archaeology students.

According to official figures, Dispilio draws some 60,000 visitors a year.

“Compared to southern Greece, Macedonia, which is celebrating the centenary of its liberation from Ottoman rule, has fallen behind in promoting its archaeological heritage,” said Western Macedonia Regional Governor Giorgos Dakis. “We have to speed up now to make up for lost time.”

Please visit the site:

http://www.ekathimerini.com/4dcgi/_w_articles_wsite1_1_13/07/2012_452040

MAJOR PROJECT TO DOCUMENT ALL EGYPT'S SITES STARTS WITH BENI HASSAN TOMBS, BY NEVINE EL-AREF

National initiative, overseen by Egypt's antiquities ministry, aims to document details of country's historical heritage

Eight years after giving the go-ahead for the National Project to Document Egypt's Heritage, Beni Hassan necropolis in the Upper Egyptian town of Minya has become the first site on the list to be documented.

The Ministry of State for Antiquities (MSA) is responsible for archaeologically documenting Egypt's cultural and historical heritage, in an attempt to protect and preserve it, as well as providing comprehensive and detailed studies of every site and monument in Egypt for researchers and students in the field.

Mohamed Ibrahim, antiquities's minister, told Ahram Online that Egyptologists used state-of-the-art equipment and modern technology to document the necropolis and published the findings in a booklet of 337 pages, including 268 photos and 62 drawings and charts.

Director of the ministry's registration department, Magdi El-Ghandour, described the documentation effort as one of Egypt's major projects to preserve its heritage. He added that the project aims to establish a scientific database for every monument in Egypt, to help the work of researchers.

"It is the second documentation project to be established in Egypt; the first was carried out in 1985 during the Nubian temples salvage operation, documenting the Nubian temples whether rescued or inundated in Lake Nasser."

Ahmed Saeed, professor of ancient Egyptian civilisation at Cairo University, stated that the Beni Hassan necropolis is the first archaeological site to be documented, and many are still on the list. He said that Egyptologists had focused their documentation work on the 12 out of 39 tombs within the necropolis which are complete and have distinguished wall paintings and architecture.

Beni Hassan is an ancient Egyptian necropolis located approximately 20 kilometres to the south of Minya. It includes 39 rock-hewn tombs, some of which belong to the Old Kingdom, but the majority are dated to the Middle Kingdom. Only 12 tombs are decorated and most were left unfinished. The best examples belong to the local "nomarchs" (governors) from the Middle Kingdom.

The necropolis is located on the eastern bank of the Nile, overlooking the river valley with magnificent views in both directions. A temple constructed by Queen Hatshepsut and Thutmose III dedicated to the local goddess Pakhet was found to the south of the necropolis.

Please visit the site:

<http://english.ahram.org.eg/NewsContent/9/40/46726/Heritage/Ancient-Egypt/Major-project-to-document-all-Egypt-sites-starts.aspx>

ARCHAEOLOGISTS DISCOVER BULGARIAN HERCULANEUM

Bulgarian archaeologists have found a unique for the Bulgarian Black Sea coast underwater district with remnants from an early Byzantine fortress. Photo by Elena Foteva for 24 Chassa.

A Bulgarian Herculaneum, named Akra, has been discovered by archaeologists on the Akin cape, near the town of Chernomorets on the southern Black Sea coast.

The information was reported by the Director of the National History Museum, NIM, Bozhidar Dimitrov, speaking in an exclusive interview for the online edition of the Bulgarian 24 Chassa (24 Hours) daily.

The historian says that the settlement had been destroyed by an Avar invasion.

Ivan Hristov, who leads the archaeological team and is a Deputy of Dimitrov, is continuing excavations on the cape, where a unique for the Bulgarian Black Sea coast underwater district with remnants from an early Byzantine fortress have been found. The fortress, initially believed to be named Krimna, dates from the end of the 5th century A.C.

According to Hristov, the fire set by the Avars, in some way sealed the finds into the earth, similarly to the lava from Vesuvius sealing Pompeii. The heavy tile roofs collapsed preserving everything underneath.

Dimitrov told 24 Chassa that the finds included several fully preserved vessels, clay amphorae, lamps, gorgeous tiny glass cups, along with a number of ceramic fragments, which will be restored. The items were made at the time by craftsmen in northern Africa and then taken to Akin by ships.

The NIM Director further reiterates that after taking a thorough look at the finds and digging deeply into archives, he realized that this has been a city very similar to the Italian Herculaneum in the way it has been preserved, and that he was inclined to change his initial belief the city was named Krimna.

"Most likely it was the same as now – Akra. In ancient Greek Akra means cape but also a fortress and a citadel. Many historical documents confirm it; there was such large city," says he.

The team is currently working in the southern part of the fortress, where, as Hristov reports, a large number of finds had been discovered in a small area because the construction had been very dense.

"We are studying now a third house and we see already something like a residential district behind the fortress walls, with large homes with stone foundations," the archaeologist explains.

The team has also found four large bronze coins with the portrait of Emperor Justinian the Great, showing that the fortress was built during the reign of Emperor Anastasius about year 513, and was later reinforced by Justinian.

The excavations on cape Akin are under the patronage of NIM in partnership with the Archaeology Institute at the Bulgarian Academy of Sciences, BAS, and the History Museum in Burgas, and are financed by the Via Pontica program for which Finance Minister, Simeon Djankov, slated funds. Students from the Sofia University are taking part in the digs.

Hristov and his team demand a ban on all construction in the area in order to preserve the precious discoveries.

The terrains west from Chernomorets are still untouched by construction, and very picturesque, but private individuals have claimed already ownership on the lands.

Please visit the site: http://www.novinite.com/view_news.php?id=141220

ARCHAEOLOGISTS UNEARTH TEMPLE TO DEMETER IN SICILY

Archaeologists have discovered what may be among the oldest remains at the ancient site of Selinunte: an ancient temple.

Inside, fragments have been found that help explain the site's significance: an offering to Demeter, the goddess of grain and agriculture; a small flute, made of bone and dating to 570 BC; a small Corinthian vase.

These findings are critically important in helping archeologists to date the temple where they were found, to around the 6th century BC - possibly the oldest in the archaeological area of Selinunte in Sicily.

They've been unearthed in recent months by a team led by Clemente Marconi of New York University, working with the Department of Culture and Identity in Sicily and Selinunte Archaeological Park Together, they've also identified the remains of a central colonnade and nearby are pottery shards dated from around 650 BC, including a long vessel decorated with grazing animals.

The research confirms assumptions made about the history and age of temple.

Particularly significant, researchers say, was the discovery of the flute, which suggests musical performances and dances related to worship of the goddess Demeter, depicted on a series of Corinthian vases found in the area.

Researchers still hope to better understand the dimensions and the age of the temple, within the context of the full archeological site of Selinunte. (ANSamed).

Please visit the site:

http://www.ansamed.info/ansamed/en/news/nations/italy/2012/07/11/Archaeologists-unearth-temple-Demeter-Sicily_7174433.html

ARCHAEOLOGISTS UNEARTH AND REOPEN THE ACHAEMENID SEWAGE SYSTEM AT PERSEPOLIS

Iranian Archaeologists have begun work on unearthing the Persepolis sewage system, which in ancient times diverted rainwater from the platform to prevent flooding, reported the Persian service of ISNA on Tuesday.

According to the news, apart from the sewage system, archaeologists have identified three water and irrigation systems at Persepolis, which circulated water over the platform. The sewage system, which is one of the most complex systems in the ancient world, diverted excess water flowing down from Mount Rahamt, away from the platform.

The Achaemenid engineers constructed and implemented the sewage system inside the platform before construction of the citadel. The oldest sewage system at Persepolis is dated to the reign of Darius the Great (r. 550-486 BCE).

Archaeologists believe that by unearthing and re-opening the ancient waterways and the sewage systems, they will be able to resolve the flood issue that Persepolis has been suffering from, particularly in the past few years.

Last year archaeologists warned the authorities that if no necessary measures were taken immediately to resolve the flood issue at Persepolis, the ancient edifice will cease to exist within 10 years.

Please visit the site:

http://www.cais-soas.com/news/index.php?option=com_content&view=article&id=365:10-07-2012&catid=64

FROM TURBINES TO TETRICUS: ENGINEERING TECHNOLOGY REVEALS SECRETS OF ROMAN COINS

Archaeologists and engineers from the University of Southampton are collaborating with the British Museum to examine buried Roman coins using the latest X-ray imaging technology.

Originally designed for the analysis of substantial engineering parts, such as jet turbine blades, the powerful scanning equipment at Southampton's μ -VIS Centre for Computed Tomography is being used to examine Roman coins buried in three archaeological artefacts from three UK hoards.

The centre's equipment can scan inside objects – rotating 360 degrees whilst taking thousands of 2D images, which are then used to build detailed 3D images. In the case of the coins, the exceptionally high energy/high resolution combination of the Southampton facilities allows them to be examined in intricate detail without the need for physical excavation or cleaning. For those recently scanned at Southampton, it has been possible to use 3D computer visualisation capabilities to read inscriptions and identify depictions of emperors on the faces of the coins – for example on some, the heads of Claudius II and Tetricus I have been revealed.

University of Southampton archaeologist, Dr Graeme Earl says, “Excavating and cleaning just a single coin can take hours or even days, but this technology gives us the opportunity to examine and identify them quickly and without the need for conservation treatment at this stage. It also has potential for examining many other archaeological objects.

“The University's Archaeological Computing Research Group can then take this one step further – producing accurate, high resolution CGI visualisations based on scan data. This gives archaeologists and conservators around the world the opportunity to virtually examine, excavate and ‘clean’ objects.”

Dr Roger Bland, Head of Portable Antiquities and Treasure at the British Museum comments, “This scanning technique is already yielding some fascinating results and the possibility of identifying a hoard of coins in a pot, without removing them, is very exciting. Working with archaeologists and engineers at Southampton, it is exciting to be pioneering and exploring the potential of a process which is faster, cheaper and less interventive than excavation.”

The three objects examined at Southampton are:

- A cremation urn containing nine coins, dating from AD282, found in the Cotswolds. This item in particular would take months to excavate – with archaeologists needing to carefully examine bone fragments and remains to extract more information about its past.

- An estimated 30,000 Roman coins discovered in Bath, dating to around AD270 and concreted together in a large block weighing over 100 kilograms (radiograph image only).
- A small pot dating to the 2nd century found in the Selby area of East Riding in Yorkshire.

Director of the University's μ -VIS Centre for Computed Tomography, Professor Ian Sinclair says, "Our centre examines a wide variety of objects from the layup of individual carbon fibres in aircraft wing components, to the delicate roots of growing plants, and now ancient Roman coins. It is our integration of state-of-the-art imaging hardware, world-class computing and image processing expertise, which allows us to break new ground.

"We have recently formed an inter-disciplinary research group for Computationally Intensive Imaging, which brings together a broad spectrum of world-class imaging activities from disciplines across the University – of which this project is an excellent example."

The University of Southampton and the owners of the artefacts have plans to share the scan data with the public, hopefully through future exhibitions and online.

Ends

To see a moving image of coins inside the Selby area hoard pot, visit:

<http://digitalhumanities.soton.ac.uk/projects/hoard-imaging/>

Notes for editors

μ -VIS Centre for Computed Tomography www.southampton.ac.uk/muvis/
Archaeological Computing Research Group www.soton.ac.uk/archaeology/acrg
Computationally Intensive Imaging Research Group
www.multidisciplinary.soton.ac.uk/groups/imaging/#about
British Museum www.britishmuseum.org/about_us.aspx
Portable Antiquities Scheme www.finds.org.uk

[Image from the EurekAlert! site.]

<http://www.eurekalert.org/multimedia/pub/45378.php?from=216535>
http://media.eurekalert.org/multimedia_prod/pub/web/45378_web.jpg

Rendered Image of CT Scan of Coins in Pot

Caption: This is a computer rendered image of the coins extracted from the CT data (scan) of the complete pot from the Selby Area Hoard.

Credit: University of Southampton

Usage Restrictions: None

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Please visit the site:
http://www.southampton.ac.uk/mediacentre/news/2012/jul/12_106.shtml

SEA SURRENDERS PRISTINE ROMAN SARCOPHAGUS

A Turkish press report describes the sarcophagus discovery

Diving school trainer Hakan Gulec came across more than fish and flotsam during a recent trip to the bottom of the ocean near Antalya off the coast of southern Turkey. An object protruding through the sand on the sea bed caught Gulec's attention, prompting the intrepid explorer to dislodge and photograph the mystery find. According to Hürriyet Daily News, he then showed his images to officials at Alanya museum who were taken aback by the discovery: a striking, well-preserved sarcophagus adorned with Medusa heads, cupids holding up garlands and dancing women at the corners."

The Alanya museum has gained a new piece of art," said its director Yasar Yildiz. "The figures on it show that it dates from the Roman period." But where has it come from? Perhaps it was made in the famous sculpture school at Aphrodisias further up the coast, which produced sculptural works for the Roman empire.

Please visit the site:

<http://www.theartnewspaper.com/articles/Sea+surrenders+pristine+Roman+sarcophagus+/26909> [Go there for image]

BRONZE AGE WORKSHOP FOUND

A wide Workshop Complex of the Bronze Age, was identified during the 2012 fieldwork season undertaken by the Italian Archaeological Mission Università degli Studi di Firenze, at the site of Erimi-Laonin tou Porakou

According to the Department of Antiquities the Workshop Complex covers an area measuring 20 x 20 m. which is currently under investigation.

In the Storage Area I (SA I) a series of installations a circular hearth, a rounded and rectangular basin, and jars and pithoi emplacements, were found directly carved into the plaster floor or directly built on it, thus hinting to a multi-functional room. In the Workshop Complex an extended area of 10 m. towards the West was investigated and three new rooms (SA III, SA IV, SA V) were exposed.

The ceramic assemblage of the two Phases clearly hints to a typical production of the South Coast horizon of the Early to Late Bronze Age I period, with a large percentage of Red-Polished and less attested Drab-Polished ware. Furthermore, a collection of stone tools, clay spindle-whorls with incised decoration and loom-weights were recorded, thus supporting the interpretation of the Workshop Complex, as an area mainly dedicated to textiles activities.

This year's investigations took place from April 1st to April 28th 2012. The results this year confirmed the occupation of the site throughout two main phases (Phases A and B) ranging from the end of the Early to the very beginning of Late Bronze Age period (EC II/III-LC I).

Please visit the site: <http://www.incyprus.com.cy/en-gb/Blogs/4324/28740/bronze-age-workshop-found>

EARLY HUMANS SETTLED IN ARABIA, BY **DAN VERGANO**

Stone Age tools uncovered in Yemen point to humans leaving Africa and inhabiting Arabia perhaps as far back as 63,000 years ago, archaeologists report. "The expansion of modern humans out of Africa and into Eurasia via the Arabian Peninsula is currently one of the most debated questions in prehistory," begins an upcoming *Journal of Human Evolution* report led by Anne Delagnes of France's Université Bordeaux. The archaeologists report from the site of Shi'bat Dihya located in a wadi, or gully, that connects Yemen's highlands to the coastal plains of the Red Sea.

The age of the site puts it squarely at a time when early modern humans were thought to be first emigrating from Eastern Africa to the rest of the world. "The Arabian Peninsula is routinely considered as the corridor where migrating East African populations would have passed during a single or multiple dispersal events," says the study.

"It has also been suggested that the groups who colonized South Asia rapidly expanded from South and East Africa along the Arabian coastlines around 60 ka BP (60,000 years ago), bringing with them a modern behavioral package including microlithic (stone) backed tools, ostrich-eggshell beads or engraved fragments. However, this scenario is not supported by any 'hard' archaeological evidence from the Arabian Peninsula. Up until recently, the absence of stratified contexts (archaeological sites) from the entirety of the region has rendered issues concerning the timing and trajectories of the earliest expansions of modern humans into the region largely theoretical."

One new site is the study's subject, Shi'bat Dihya, located along the Wadi Sudud (see map below). Excavating down to a level dating to perhaps 63,000 years ago, when the region was quite arid, the team found some "5,488 artifacts" -- Stone Age blades, pointed blades and pointed flakes, nearly an inch long or longer, as well as the bones of 97 animals, mostly cows, horses, pigs and porcupines.

Finding tool-makers so far inland, nearly 75 miles from the coast, surprised the study team, as most models of human expansion picture our ancestors migrating along the coasts on their way to Europe and Asia. "The adaptation of the occupants of Wadi Sudud to an arid environment significantly nuances the environmental determinism inherent in nearly all models concerning the peopling of southern Arabia," says the study.

"The bioenvironmental setting of the Wadi Surdud basin certainly accounts for the attractiveness of the region, even during arid periods. In the context of the Saharo-Arabian arid belt, the medium altitude foothills form ecological niches with long-lasting and

CAPTIONJHE / Elsevier

predictable sources of water and herbivores that provided ideal conditions for human settlement."

Most intriguing, the stone tools found at the site fall into the tradition of older Stone Age tools, rather than ones associated with the early modern humans thought to have left

Africa roughly 60,000 years ago. They might have belonged to descendants of earlier modern human migrants from Africa who established themselves in Arabia despite its desert conditions. Or maybe they belonged to a sister human species, our Neanderthal cousins, suggest the researchers:

"Our fieldwork at the Wadi Surdud in Yemen demonstrates that during the period of the supposed expansion of modern humans out of Africa (60,000 to 50,000 years ago), and their rapid dispersal toward south-eastern Asia along the western and southern Arabian coastlines, the interior of this region was, in fact, occupied by well-adapted human groups who developed their own local technological tradition, deeply rooted in the Middle Paleolithic. Future research will likely reveal whether the archaeological assemblages recovered from the Wadi Surdud can be associated with the descendants of anatomically modern human groups who occupied the Arabian Peninsula during (this era) or the southernmost expansion of the Neanderthals."

Please visit the site:

<http://content.usatoday.com/communities/sciencefair/post/2012/07/early-humans-settled-in-arabia-some-55000-years-ago/1>

AKKO'S MAGNIFICENT HARBOR FROM 2,300 YEARS AGO IS EXPOSED ON THE SEABED

The harbor is considered the largest and most important in the country in the Hellenistic period. Among the finds there: large mooring stones that were incorporated in the quay, which were used to secure sailing vessels. This is probably a military harbor.

In archaeological excavations the Israel Antiquities Authority is conducting at the foot of Akko's southern seawall, installations were exposed that belong to a harbor that was operating in the city already in the Hellenistic period (third-second centuries BCE) and was the most important port in Israel at that time.

The finds were discovered during the course of archaeological excavations being carried out as part of the seawall conservation project undertaken by the Old Akko Development Company and underwritten by the Israel Lands Administration.

The first evidence indicating the possible existence of this quay was in 2009 when a section of pavement was discovered comprised of large kurkar flagstones dressed in a technique reminiscent of the Phoenician style that is characteristic of installations found in a marine environment. This pavement, which was discovered underwater, raised many questions amongst archaeologists. Besides the theory that this is a quay, some suggested this was the floor of a large building.

According to Kobi Sharvit, director of the Marine Archaeology Unit of the Israel Antiquities Authority, "Among the finds we've discovered now are large mooring stones that were incorporated in the quay and were used to secure sailing vessels that anchored in the harbor c. 2,300 years ago. This unique and important find finally provides an unequivocal answer to the question of whether we are dealing with port installations or the floor of a building. In addition, we exposed collapse comprised of large dressed stones that apparently belonged to large buildings or installations, which was spread of a distance of dozens of meters. What emerges from these finds is a clear picture of systematic and deliberate destruction of the port facilities that occurred in antiquity". Sharvit adds, "Recently a find was uncovered that suggests we are excavating part of the military port of Akko. We are talking about an impressive section of stone pavement c. 8 meters long by c. 5 meters wide that was partially exposed. The floor is delimited on both sides by two impressive stone walls that are also built in the Phoenician manner. It seems that the floor between the walls slopes slightly toward the south, and there was a small amount of stone collapse in its center. Presumably this is a slipway, an installation that was used for lifting boats onto the shore, probably warships in this case". According to Sharvit, "Only further archaeological excavations will corroborate or invalidate this theory".

The bottom of the ancient harbor was exposed at the foot of the installations. There the mooring stones were found as well as thousands of fragments of pottery vessels, among which are dozens of intact vessels and metallic objects. The preliminary identification of the pottery vessels indicates that many of them come from islands in the Aegean Sea,

including Knidos, Rhodes, Kos and others, as well as other port cities located along the Mediterranean coast.

These finds constitute solid archaeological evidence regarding the location of the Hellenistic harbor and perhaps the military port.

According to Sharvit, “It should be understood that until these excavations the location of this important harbor was not clear.

Remains of it were found at the base of the Tower of Flies and in the region of the new marina in excavations conducted in the early 1980s by the late Dr. Elisha Linder and the late Professor Avner Raban. But now, for the first time, parts of the harbor are being discovered that are adjacent to the ancient shoreline and the Hellenistic city.

Unfortunately, parts of the quay continue beneath the Ottoman city wall – parts that we will probably not be able to excavate in the future.

Nevertheless, in those sections of the harbor that extend in the direction of the sea and the modern harbor the excavation will continue in an attempt to learn about the extent of the ancient harbor, and to try and clarify if there is a connection between the destruction in the harbor and the destruction wrought by Ptolemy in 312 BCE, the destruction that was caused by the Hasmonean uprising in 167 BCE or by some other event.

Click on the link below to download high resolution photographs:

Photographic credit: Kobi Sharvit, courtesy of the Israel Antiquities Authority.

1. A member of the Marine Archaeology Unit of the Israel Antiquities Authority standing on the ancient quay that was exposed in Akko. In the middle of the picture one can see the floor of the quay, built of large dressed stones. In some of the stones there is a hole for inserting a wooden pole – probably for mooring and/or dragging the boat.

2-3. A mooring stone that was incorporated in the quay. There was a hole in the stone in which the mooring/anchoring rope was inserted.

4. An imported bowl characteristic of the Hellenistic period. The bowl was found in a layer of harbor sludge. This layer contained thousands of intact pottery vessels, potsherds, etc.

For further details, kindly contact Yoli Shwartz, Israel Antiquities Authority spokesperson, 052-5991888, dovrut@israntique.org.il.

Please visit the site: <http://www.ynetnews.com/articles/0,7340,L-4256711,00.html>

CAVE YIELDS EARLY RECORD OF DOMESTIC ANIMALS, BY NICHOLAS BAKALAR

Archaeologists exploring a cave in Namibia have found evidence for the earliest domesticated animals in sub-Saharan Africa.

The cave, in the northwestern part of the country, contains stone and bone tools, beads and pendants, pieces of pottery, and the bones of many animals — guinea fowl, ostriches, monitor lizards, tortoises, impala, rock hyraxes and various rodents.

The researchers also found two teeth of either a goat or a sheep — the teeth were too worn to say which, but their form is consistent with that of modern African domesticated sheep and goats. There are no wild sheep or goats in sub-Saharan Africa today. Although some wild species probably became extinct around 12,000 years ago, there is no evidence of their presence in the western part of the continent. The researchers are certain that the remains they found belong to domestic animals.

The teeth date from 2,190 and 2,270 years ago. Until now, the oldest radiocarbon-dated remains were of 2,105-year-old-sheep found in South Africa.

The study, a collaboration between the National Museum of Namibia and the National Museum of Natural History in Paris, appears in PLoS One.

Its lead author, David Pleurdeau, an assistant professor at the Paris museum, said the find did not necessarily mean that people living near this site were breeding domestic animals.

“In the cave, there is no evidence that the inhabitants were herders,” he said. “We still don’t know if it’s herders migrating to the area, or the introduction of a few sheep among an indigenous group.”

Please visit the site: <http://www.nytimes.com/2012/07/17/science/cave-yields-early-record-of-domestic-animals.html?src=recg>

RANDOM DISCOVERY RESULTS WITH THE FIRST ‘ARCHEO PARK’

The site of Limantepe Archaeology Park was accidentally discovered when experts were taking aerial photographs of the region. The site is now considered to be one of the world's 10 most important underwater locations. There are many artifacts unearthed during the excavation works. The area has been shown to be one of the 10 most important underwater sites.

When ancient ruins were spotted in aerial photographs of the town of Urla in Izmir, steps were taken to initiate Turkey's first underwater excavation. As a result a new archaeology park, Limantepe, was born.

Limantepe is Turkey's first underwater excavation site and work is being carried out there with the support of Ankara University's Underwater Research Center. The area has been shown to be one of the 10 most important underwater excavations sites in the world, according to the head of the excavation, Prof. Hayat Erkanal. Limantepe is the site of an ancient city dating back to the Roman Empire, and also a site where hunter-gatherer societies later evolved into agricultural ones. The excavation began on land, with the underwater portion of the work beginning coincidentally, Erkanal said.

The first underwater archaeology park

“If someone had told me that this would be one of the important underwater archaeological sites I would have laughed. Everything developed coincidentally,” Erkanal said. “We were given several aerial photos that the municipality had

taken in preparation for landscaping work in 1999. We saw some spots connected to the coast, and there we found the remnants of a harbor.

In the first years, we tried to conduct the excavations without professional support, but it didn't work out. In those days, the University of Haifa in Israel and Ankara University signed an agreement. We asked for help [from them] as they had experience with underwater excavation. We worked together and learned many things.

There had been some work done previously on the wrecks of ancient ships, but no underwater excavations.

When Ankara University provided the necessary equipment, we established our underwater excavation team for the first time. The team quickly began finding important information. A two-winged harbor with a height of 350 to 400 meters, dating back to the 6th century B.C., was unearthed, which was the largest harbor of the time. Now, we are working at a depth of 7 to 8 meters on the floor of the harbor, where we have found the remains of a city spreading over one square kilometer.”

The process of desalinating the artifacts from the site will take six months, and it will be a year before they are ready to be exhibited, Erkanal said.

“We are finding many artifacts in the underwater excavation at Limantepe. When the laboratory is ready, we will be able to excavate a lot of historical artifacts. But we have to desalinate them first, to keep the artifacts in good condition. We can dig out the materials over several months, and then the other institutions will continue working on the pieces for a longer period. Several museums could be filled with these artifacts,” Erkanal said.

The team working at the site consists of 70 people, including students who are being trained to work on excavations throughout Turkey.

Excavations will also be conducted at Teos and Eritrai.

Artifacts from ships are already being exhibited to shed light on the history of the site and attract citizens’ attention, Erkanal said.

Many people visit the center to see how underwater excavations are carried out.

Tourists interested in excavation works

“Tourists are interested in the excavation work, so we established a program whereby tourism companies bring groups of tourists on determined days, and groups can visit by appointment. This led us to [creating] the Archeo Park project.

First we decided to establish a museum, but there is already work underway to establish a Museum of Aegean Civilizations in Izmir.

We thought that a museum in the town wouldn’t draw the intended number of tourists. We plan to exhibit ships and artifacts from them, to help describe the lifestyles of the past. We will use historical ships to take visitors on short trips, and people will be able to view an ancient ship dating back 3,000 years. Urla Municipality allocated 1.1 hectares of land to the project. This year, we are going to establish an Archeo Park with the support of the Koç Foundation, and next year, we are going to open the park, making Urla a significant world archaeological center. In the future, we plan to transform the park into the Naval Archeology Institution,” said Erkanal.

Please visit the site: <http://www.hurriyetdailynews.com/random-discovery-results-with-the-first-archeo-park.aspx?pageID=238&nID=25789&NewsCatID=375>

ANCIENT VILLAGE HOLDS LIFESTYLE CLUES FOR ARCHAEOLOGISTS, BY DANIEL MILLER

Australian archaeologists are embarking on a study of one of the earliest ever records of a key transformation in human history: the end of the nomadic lifestyle.

The team, headed by Dr Andrew Fairbairn from the University of Queensland, will join with a British team next week to continue work on the excavation of a 10,000-year-old early village site in central Turkey.

The site, known as Boncuklu Höyük, is one of the earliest village sites found from the period when hunter-gatherer societies began to leave their nomadic lifestyle and take up farming.

Villagers lived in oval-shaped, mud brick houses and hunted, farmed and traded with other local communities on an area of wetlands which is now a dusty plain near the city of Konya.

"It's come to be one of the key transformations in human history because, basically, the development of our civilisations is routed in a lot of these social and economic transformations that happened around about this time," Dr Fairbairn told ABC News Online.

He says the site is one of the earliest found just outside the key Fertile Crescent area of eastern Turkey, Syria and Jordan where it is thought farming first originated.

The site is expected to help archaeologists understand how humans adapted to a sedentary lifestyle and how it spread across Europe.

"This farming lifestyle then spreads around the world - it goes across Europe and it goes across Asia," Dr Fairbairn said.

"And so where Boncuklu is is that sort of first area where you have this spread of this new lifestyle.

"We've been very interested to find out whether it was, as it's always been suspected, due to farming people moving from this area of origin, the Fertile Crescent ... or whether it was due to the people who already lived there, lay hunter-gatherer societies, actually starting to develop and take up new crops and new ways of life.

"So Boncuklu is one of those very rare sites that allows us to investigate that time period."

Boncuklu is just a little bit more way out. It's these funny little huts. For me it's just something slightly more distant and a little bit more alien. It feels quite different. A little bit like you're on a slightly different world.

Boncuklu Höyük, which means "beady mound", was discovered about a decade ago by the head of the British excavation team, Dr Douglas Baird, who had worked on the nearby, famous village site of Çatalhöyük.

Dr Fairbairn says Dr Baird was trying to place the excavation of Çatalhöyük in its regional context and, in typical archaeological fashion, found Boncuklu, which is 1,000 years older, on the last day of a field survey.

Named after the high number of stone and clay notched beads found in the mound, Boncuklu first underwent excavation in 2006.

Dr Fairbairn says Boncuklu has some things in common with Çatalhöyük, but in other ways it is more "alien".

"It's an interesting story because Çatalhöyük in a lot of ways is sort of bizarre," he said.

"It's different, but there's something tangible and you can kind of understand it because of these rectangular houses and rooms and you can see fireplaces and things.

"Boncuklu is just a little bit more way out. It's these funny little huts. For me it's just something slightly more distant and a little bit more alien.

"It feels quite different. A little bit like you're on a slightly different world."

The excavation project will enter its second phase this year, after earlier developing and stabilising the site which was part of the local Turkish village.

Dr Fairbairn says the site will be expanded over the next two-and-a-half months with the help of about 50 students and professional archaeologists, about 30 of which will come from Australia.

He says a ring of huts on the mound are in the process of being unearthed, and archaeologists have found ash and bones in the centre of the huts, potentially signalling either a rubbish dump or meeting area.

Over the past year the team has discovered the skulls of wild cattle embedded into the wall plaster of huts, a tradition also carried out at Çatalhöyük.

The remains of plants foreign to the area that were used as crops have also been found on land near the site, Dr Fairbairn says.

"There's some kind of use of crops but it seems to be quite small - it seems to be almost quite marginal in a lot of ways," he said.

"What we have is, basically, a hunter-gatherer society there that is settling down, using some crops - importing them or trading them with other settlements."

Connected communities

Dr Fairbairn says work done on human remains from the site has helped add to the understanding of how the village functioned and how it fit into its region.

"We have a sense now from some of the stable isotope work on the bones that this is a small community that lives in contact with other people and there seems to be some kind of movement," he said.

"You can look at what people eat and use that to hypothesise where they're coming from.

"What we tend to find is, in a lot of ancient communities, people have the same type of diet in one community, and what that leaves is a similar carbon and nitrogen isotope signal in their bones.

"You can look at the mix you actually have on your site and sort of see whether everyone is the same or whether you've got one person who is different.

"And what you tend to find in Boncuklu is a picture that we're finding all the way across Europe now for this period, which is that all the men are the same and all the women are actually different."

Dr Fairbairn says it appears men may have inherited land or were fixed in one place while women moved to different settlements.

Archaeologists in training

I would be kicking myself if I didn't take this opportunity ... it's a site that most archaeologists would kill to go to. UQ student Jessica Heidrich

One of the students who will spend two months living onsite in Turkey is the University of Queensland's Jessica Heidrich.

She says she expects the trip will provide valuable fieldwork experience which is essential for anyone pursuing a career in archaeology.

"I would be kicking myself if I didn't take this opportunity even though I have to postpone my study and I have to save up a lot of money. It's a site that most archaeologists would kill to go to," she said.

"The contacts, hopefully, and opportunity for more fieldwork that will come out of it is what I'm really going for."

Fellow UQ undergraduate Anna Florin went to the excavation site last year and says digging up an ancient civilisation requires a lot of patience.

"I spent most of my time in a trench where they'd already found a neolithic house that was subterranean and we were taking away plaster layers on it and just getting an idea of how the house was constructed.

"So it was a lot of intricate work, peeling off one layer at a time."

Dr Fairbairn says part of the second phase of the dig will be to develop more information about the site for the local Turkish community, as well as for tourists.

Please visit the site: <http://www.abc.net.au/news/2012-07-16/ancient-village-holds-lifestyle-clues-for-archaeologists/4130628> [Go there for pix gallery]

PHARAOH'S PLAYGROUND REVEALED BY MISSING FRACTALS, BY COLIN BARRAS

THE Dahshur royal necropolis in Egypt was once a dazzling sight. Some 30 kilometres south of Cairo, it provided King Sneferu with a playground to hone his pyramid-building skills - expertise that helped his son, Khufu, build the Great Pyramid of Giza. But most signs of what went on around Dahshur have been wiped away by 4500 years of neglect and decay. To help work out what has been lost, archaeologists have turned to fractals.

All around the world, river networks carve fractal patterns in the land that persist long after the rivers have moved on (see picture).

"You can zoom in as much as you like, at each magnification the [natural fractals] would look the same," says Arne Ramisch at the Alfred Wegener Institute for Polar and Marine Research in Potsdam, Germany. This should be the case around Dahshur, because it sits on the fringes of the Western desert, where river channels drain into the floodplain of the Nile - but it isn't.

Ramisch and his team generated a digital model of the topography around Dahshur and assessed its fractal geometry as part of their archaeological investigations. They found a surprisingly large area around the pyramids - at least 6 square kilometres - where the natural fractal geometry was absent. The find suggests that the entire area was once modified, probably under the orders of Sneferu and other pharaohs of the Old Kingdom (Quaternary International, DOI: 10.1016/j.quaint.2012.02.045).

"The modification is hard to spot, especially if your eyes are untrained," says Ramisch. "Even with trained eyes, it is difficult to believe the gigantic footprint the Egyptians have left."

The disturbance to the natural fractals can even give a sense of what occupied the site. In this case, says Ramisch, it was probably broad terraces several kilometres long, which would have "increased the sense of monumentality of the pyramids".

"It's a new approach," says Keith Challis at the University of Birmingham, UK. There is a well-established link between human activity and landscape modification, he says. "This provides an interesting new way of identifying such modification."

Please visit the site: <http://www.newscientist.com/article/mg21528743.500-pharaohs-playground-revealed-by-missing-fractals.html>

REVOLUTIONIZING ARCHAEOLOGY - FLYING LASERS REVEAL BURIED HISTORICAL STRUCTURES, BY MARKUS BECKER

Archaeology is being revolutionized by remote-scanning techniques that use lasers to detect otherwise invisible ground features. The technology digitally extracts vegetation for a clean image of the earth's surface. Archaeologists in Germany have already discovered thousands of new sites.

The Glauberg is a hot spot for archaeologists. For decades, researchers have been studying the hill in the central German state of Hesse, where people settled some 7,000 years ago.

Over the millennia, the plateau was inhabited by Celts and Alemanni and, in the Middle Ages, people there built castles that reached for the sky. Accordingly, researchers have found plenty of artifacts. In 1996, they made the sensational discovery of an almost perfectly preserved statue of a Celtic warrior, which is now known as the Celtic Prince of Glauberg.

It was thought unlikely that the mound would yield any more big surprises. At least that was the assumption until people with flying lasers showed up. They flew an airplane over the Glauberg multiple times, sending pulses of light to the ground and measuring their echoes. This "light detection and ranging" technology, known as LIDAR, helps scientists record differences in altitude down to just a few centimeters. Trees and bushes are no obstacle to accurate measurements -- they can simply be calculated out later with a computer. What remains is a three-dimensional image of the naked earth's surface, including geometric formations that betray any structures that might be hidden underground.

The researchers were fairly stunned by what the remote-sensing technology turned up on the Glauberg. At first glance, they recognized around a dozen potential burial mounds that they hadn't known about before. "We went and took a closer look at five of them," says Axel Posluschny. "They were all burial mounds."

Broad Potential

Posluschny manages a project called Archaeolandscapes Europe (ArcLand), which operates under the Roman-Germanic Commission of the German Archaeological Institute. Some 57 European universities and research centers are participating in the €5 million undertaking, which began in 2010 and ends in 2015. The aim is to increase the archaeological use of modern remote-sensing technology such as LIDAR, ground-penetrating radar and other electric and magnetic techniques.

The broad potential of remote-sensing technology has been highlighted in an often spectacular manner in recent years. The Glauberg isn't the first site where new

discoveries have come to light through aerial surveying even long after they have been examined countless times and become tourist destinations.

The Boyne Valley in Ireland, for example, contains three prehistoric monuments that are part of the Brú na Bóinne UNESCO World Heritage Site. A team with the Irish research project "Discovery Programme" scanned the already heavily researched area with lasers, finding a number of small mounds, possible burial tombs and Stone Age earthworks. The map was practically filled with points of potential archaeological interest.

Understanding an Entire Cultural Landscape

Lidar technology has also allowed archaeologists to make surprising discoveries in more obscure locations. For example, in a forest near Göppingen, in the southwestern German state of Baden-Württemberg, they have found an entire system of fortifications that by no means buried or invisible at ground level. "The wall was 3- to 4-meters-high at some points," says Jörg Bofinger, an official from the state's Stuttgart-based office of historical preservation. "No one had this construction on their radar. It was completely unknown." What's more, that was the case even though the state has been systematically taking aerial images since the beginning of the 1980s. "It's unbelievable that something like this would slip past us," Bofinger says.

Still, the archaeologists hope that using the high-tech aerial images will provide more than spectacular individual finds. "One doesn't just look at a single discovery site anymore but tries to understand the entire cultural landscape instead," Posluschny says. "That is an approach that is gaining a bigger foothold in archaeology." The reason for this, he continues, is that one can only understand "how people thought, lived and worked" if one views a find in the context of its wider environment.

The new remote-sensing technologies have revolutionized excavation practices for a second time. Roughly 60 years ago, archaeologists who had traditionally only used shovels, picks and brushes in their search for relics from the past started using another tool: aerial images. Doing so allowed them to swiftly discover that many structures that were practically invisible from below could only be made out from a bird's-eye view.

This is particularly true when it comes to large-scale constructions, such as the earthworks from Cornesti. These fortifications in western Romania presumably date back to the Bronze Age, or roughly 3,500 years ago, and are of a truly massive scale. The inner core of the four concentric fortifications alone has an area of almost 6 square kilometres (2.3 square miles). When viewed from above, waves in the landscape that seem inconspicuous from the ground turned out to be a system of ditches and ramparts.

Making Forests Disappear

Even better insights can be gained from something called photogrammetry. This technique entails taking images of an area from several perspectives using conventional cameras, and then combining these images to generate a 3-D model of it. However, the problem with normal aerial images is that landscapes aren't always merely covered with meadows or fields of wheat. Instead, dense forests often conceal everything lying beneath them.

The LIDAR equipment can overcome this hurdle. In addition to providing significantly more precise 3-D images, it also allows for overgrowth to be taken out of the equation. What's more, one can capture images of massive expanses in one fell swoop. For example, LIDAR scans of almost the entire state of Baden-Württemberg have been taken. The 160 terabytes of data in these scans is at first automatically examined by a computer for conspicuous structures. Given the sheer scale of the information, this takes some time, however. The computers have already been running calculations for five years, and Bofinger estimates that it will take another three years before maps of all potential archaeological sites will be available.

But just how valuable these searches have been can be seen just from a single example in the southern Black Forest. In this roughly 2,000-square-kilometer area, some 3,000 archaeological sites were already known. But, says Bofinger, "after the LIDAR scan, we had more than 36,000 sites." Suddenly, researchers found themselves looking at a cultural landscape that had sunk into obscurity. What merely looked like dense forests in earlier aerial images could now be recognized as charcoal kilns, furrows, mining structures, earthworks and burial mounds.

Drones Helping Out

The lasers can even make out structures lying below the surface of water. Although they can only penetrate up to four meters deep, that is enough in many cases because most finds submerged in shallow water lie near shorelines.

What's more, there are a range of technologies that allow underground structures to be recognized without having to move mountains of earth.

Ground-penetrating radar, also known as georadar, for example, can investigate ditches or other depressions up to a depth of two meters.

Likewise, electromagnetic induction is well-suited to searching for buried structures.

In the coming years, looking at sites from above could also become the standard method for investigating the past because the costs continue to go down. Just a few years ago, researchers still had to board planes to take such images, but now unmanned drones are being used to perform jobs that can be handled from low altitudes. The combination of LIDAR technology and computer-supported image analysis is providing fantastic opportunities, according to Posluschny.

"A revolution is currently taking place in remote-sensing archaeology," he says.

Please visit the site: <http://www.spiegel.de/international/zeitgeist/a-846793.html>

FUNERARY BOAT OF KING DEN (DYN1)

First Dynasty funerary boat discovered at Egypt's Abu Rawash French archaeological mission discovers 3000BC funeral boat of King Den northeast of Giza Plateau, indicating earlier presence at the Archaic period cemetery Ahram Online, Wednesday 25 Jul 2012

During routine excavation works at the Archaic period cemetery located at Abu Rawash area northeast of the Giza Plateau, a French archaeological mission from the French Institute of Oriental Archaeology in Cairo (IFAO) stumbled on what is believed to be a funerary boat of the First Dynasty King Den (dating from around 3000BC).

The funerary boat was buried with royalty, as ancient Egyptians believed it would transfer the king's soul to the afterlife for eternity.

Unearthed in the northern area of Mastaba number six (a flat-roofed burial structure) at the archaeological site, boat consists of 11 large wooden planks reaching six metres high and 150 metres wide, Minister of State for Antiquities Mohamed Ibrahim said in a press release sent to Ahram Online on Wednesday.

The wooden sheets were transported to the planned National Museum of Egyptian Civilisation for restoration and are expected to be put on display at the Nile hall when the museum is finished and opens its doors to the public next year.

The IFAO started its excavation works at Abu Rawash in the early 1900s where several archaeological complexes were found. At the complex of King Djedefre, son of the Great Pyramid King Khufu, Emile Chassinat discovered the remains of a funerary settlement, a boat pit and numerous statuary fragments that bore the name of Fourth Dynasty King Djedefre.

Under the direction of Pierre Lacau, the IFAO continued its excavation work and found new structures to the east of the Djedefre pyramid. However objects bearing the names of First Dynasty Kings Aha and Den found near the pyramid indicate an earlier presence at Abu Rawash.

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