



Επιστημονικό Σωματείο,
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Κάνιγγος 27, 106 82 Αθήνα
(Ένωση Ελλήνων Χημικών)

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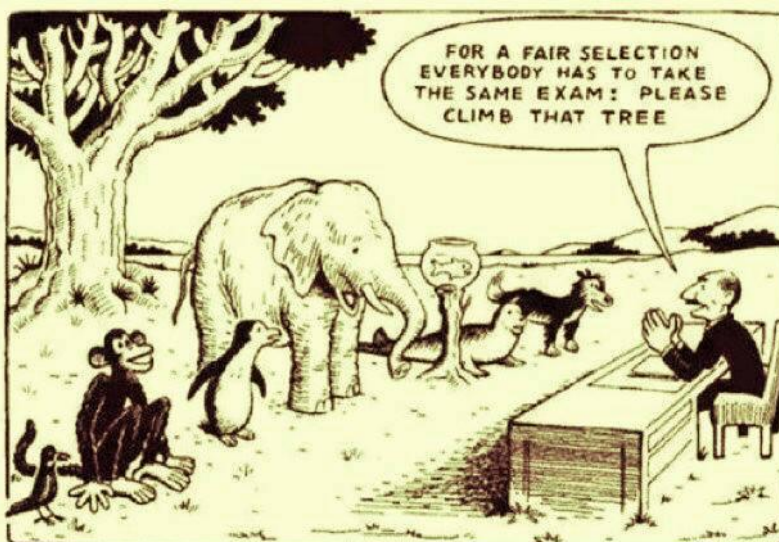
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Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

- Ιούνιος 2014 -



Our Education System

"Everybody is a genius. But if you judge a fish by its ability to climb a tree, it will live its whole life believing that it is stupid."

- Albert Einstein

Newsletter of the Hellenic Society of Archaeometry

- June 2014 -

Nr. 159

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LRCW 4 - Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean. Archaeology and archaeometry. The Mediterranean: a market without frontiers. British Archaeological Reports International Series 2616 (2 volumes) page

Radiocarbon Dating of the Neolithic Lakeside Settlement of Dispilio, Kastoria, Northern Greece, Radiocarbon, Vol 56, Nr 2, 2014, p 511–528 page

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ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS

MEDCLIVAR 2014 CONFERENCE **“UNDERSTANDING CLIMATE EVOLUTION** **AND EFFECTS ON ENVIRONMENT AND** **SOCIETIES IN THE OLD WORLD REGION”**, **22-25 JUNE, ANKARA, TURKEY**

The conference aims to offer a forum for dissemination and discussion of recent progress in research on the climate of the region surrounding the Mediterranean Sea and extending to the Black Sea and the Caspian Sea. The objective is to promote exchange of information between, on the one hand, climatologists, and on the other hand, hydrologists, ecologists, social scientists, human health experts, economists and agronomists.

The conference sessions will include the traditional topics of the MedCLIVAR programme: paleoclimate, synoptic climatology, sea level and circulation, aerosol chemistry and climate, modeling of the Mediterranean regional climate system, climate change at regional scale at its impacts. Contributions on the Caspian Sea region, which is a climatically connected domain of the Seas of the Old World, are also welcome. Further the conference topics will consider impact of climate change on energy and agriculture, vulnerability of ecosystems, ecological services and extreme events. However, the organization of the conference is open for new ideas and welcome proposals for thematic sessions to be included in the conference programme. Please email proposals for session and relative conveners to [info](#). Submitted proposals will be discussed within the steering and scientific committees and considered for the conference programme.

Please email [info](#) if you want to receive updates on the conference and its organization. The accepted contributions will be published in the conference proceedings. A special issue based on the studies presented during the conference is planned.

Please visit the site: <http://www.medclivar2014conf.eu/>

HISTORICAL METALLURGY SOCIETY
RESEARCH IN PROGRESS MEETING,
FRIDAY, 14TH NOVEMBER, LINACRE
COLLEGE, OXFORD

Historical Metallurgy society in conjunction with the Research Laboratory of Archaeology and the History of Art, Oxford, would like to invite submissions for papers for a ‘Research in Progress’ study day. This meeting is aimed at a wide variety of contributors, from historical and archaeological metallurgists to excavators, historians and economists.

We would like to hear from anyone working on projects related to archaeological or historical metallurgy, and are particularly interested in bringing together contract and public sector archaeologists with academic researchers, and in fostering links between the different disciplines studying metallurgy and related activities. Whether you are a student, a researcher, an interested non-specialist, or a professional excavator, we invite you to meet others working in this field and present your research to an interested community.

Proposals for 15-20 minute oral papers in any way related to historical metallurgy are welcome. Abstracts due by 15th of June.

Conference registration will cost £15, including tea, coffee and biscuits. This *does not* include lunch, however we will be reserving spaces at local historic pubs if delegates wish to eat together, to allow people to better explore Oxford.

General enquiries and abstracts can be directed to Victoria Sainsbury or Philly Howarth at hms2014oxford@gmail.com

PERCUSSIVE TECHNOLOGY AND HUMAN EVOLUTION CONFERENCE, SEPTEMBER 18, 2014 TO SEPTEMBER 19, 2014, UNIVERSITY COLLEGE LONDON

Organized By: UCL

Event Description:

Conference on Percussive Technology and Human Evolution
UCL-Institute of Archaeology

On the 18th and 19th of September 2014 an international conference will take place at the Institute of Archaeology (University College London) as part of the project “Percussive technology in Human Evolution: A comparative approach”, sponsored by the Leverhulme Trust- International Networks Program.

Researchers from around the world working on the various facets of percussive technology will meet for two days to present new discoveries related to the role of pounding activities in areas such as Primatology, Ethnology and Archaeology. The conference aims to promote inter-disciplinary comparisons to aid better understanding of the role of pounding activities in primate evolution.

A limited number of poster presentations on themes related with the conference key topics will be accepted. Titles and abstracts should be submitted before June 15th, 2014 to Adrian Arroyo: a.arroyo@ucl.ac.uk

For registrations see: Registration for Percussive Technology and Human Evolution Conference

Conference Venue: Lecture Theatre G6. Institute of Archaeology, University College London. 31-34 Gordon Square. WC1H 0PY. London.

Contact: a.arroyo@ucl.ac.uk Adrian Arroyo (Conference Secretary)

See more details and RSVP on ArcheoScience:

http://comunidad.archeoscience.com/events/event/show?id=6489908%3AEvent%3A14454&xgi=5CUGFvhPYdMR5K&xg_source=msg_invite_event

14TH MEETING OF POSTGRADUATE CYPRIOT ARCHAEOLOGY, THE MANY FACE(T)S OF CYPRUS, 15TH–16TH OF NOVEMBER 2014, CALL FOR PAPERS

Dear colleagues,

please find below the CfP for the 14th Poca-Conference.

Please accept my appologies for any cross-posting.

With my very best wishes,

Constance von Rüden

The Institute for Archaeological Studies and the Centre for Mediterranean Studies of the Ruhr-Universität Bochum are pleased to announce the 14th POCA (Postgraduate Cypriot Archaeology). The meeting will be held on the 15th and 16th of November in Bochum. The POCA meeting offers an excellent opportunity to postgraduate students and early career professionals from various backgrounds and disciplines to present their work, exchange ideas and meet colleagues with similar research interests in Cypriot culture. Tracing cultural diversities is our general issue. Therefore, we welcome all papers regarding archaeology and history as well as studies of a wider chronological, contextual and multidisciplinary approach (e.g. anthropology, social and political sciences) to Cypriot cultures on the island and beyond.

Please send, no later than 31st July 2014, abstracts of no more than 250 words and a title, together with your email address to baerbel.morstadt@rub.de.

Papers should last for 20–25 minutes, and they will be followed by discussion. The official language of the meeting is English. Registration and opening of the meeting will take place on Friday evening (November 14th). There is no registration fee, however delegates would need to make their own travel plans and arrange their own accommodation. The meeting is open to everybody, and we invite all interested people to attend it.

Further information on:

<http://www.zms.ruhr-uni-bochum.de/veranstaltungen/event00100.html.de>

We intend to publish the papers presented at the meeting. All submissions will be subject to peer review although acceptance for presentation does not guarantee inclusion in the final publication. Further information about the publication will be given during the meeting.

We look forward to seeing you in Bochum.

Bärbel Morstadt - Jan-Marc Henke - Constance von Rügen

1^Η ΗΜΕΡΙΔΑ ΣΥΝΤΗΡΗΣΗΣ & ΜΕΛΕΤΗΣ
ΕΚΚΛΗΣΙΑΣΤΙΚΩΝ ΚΕΙΜΗΛΙΩΝ,
ΟΙΚΟΥΜΕΝΙΚΟ ΠΑΤΡΙΑΡΧΕΙΟ, ΙΕΡΑ
ΘΕΟΛΟΓΙΚΗ ΣΧΟΛΗ ΤΗΣ ΧΑΛΚΗΣ,
12 ΙΟΥΛΙΟΥ 2014

ΠΡΟΓΡΑΜΜΑ ΗΜΕΡΙΔΑΣ

Πρωινή Συνεδρίαση

11:00

- Έναρξη
- Χαιρετισμοί:
- Μητροπολίτης Προύσης κ. Ελπιδοφόρος Λαμπруνιάδης
- Πρόεδρος της Δ.Ε του ΤΕΙ Ιονίων Νήσων, Καθηγητής Ναπολέων Μαραβέγιας,
- Αντιπρόεδρος Α΄ της Δ.Ε του ΤΕΙ Ιονίων Νήσων, Καθηγητής Σωτήριος Σούλης,
- Αντιπρόεδρος Β΄ της Δ.Ε του ΤΕΙ Ιονίων Νήσων, Καθηγητής Ιωάννης Δραγώνας,
- Αντιπρόεδρος Γ΄ της Δ.Ε του ΤΕΙ Ιονίων Νήσων, Εντεταλμένος Καθηγητής Ιωάννης Πολίτης,
- Ειδικός Εκπρόσωπος του Οικ. Πατριαρχείου, Επικ. Καθηγητής Α.Ε.Α.Θ, Ιωάννης Καραπαναγιώτης.
- Παρουσίαση Ημερίδας & της Κατεύθυνσης Συντήρησης του ΤΕΙ Ιονίων Νήσων, Δρ. Χρήστος Καρύδης

Προεδρεύει: Δρ. Νικόλαος Ζαχαριάς

11:30 Δρ. Σταύρος Αρβανιτόπουλος, Τα διασωθέντα κειμήλια της Ιεράς Μονής Παναγίας Σουμελά.

11:45 Δρ. Ιωάννης Χουλιάρης, Εικόνες από τα εργαστήρια συντήρησης της 22^{ης} Εφορείας Βυζαντινών Αρχαιοτήτων.

12:00 Δρ. Χρήστος Καρύδης, Τα γνωστά & άγνωστα: μελέτη και συντήρηση τεσσάρων Κωνσταντινουπολίτικων λειτουργικών υφασμάτων

12:15 Διάλειμμα

12:45 Δρ. Νικόλαος Σαρρής, Κωδικολογία και συντήρηση του τετραευαγγελίου του Οσίου Χριστοφόρου της Παναγίας Σουμελά.

13:00 Χαράλαμπος Γαλανόπουλος, Συντήρηση & επανα-υποστήριξη του ξυλόγλυπτου τέμπλου του Ι. Ναού Αγ. Δημητρίου Ταταούλων Κωνσταντινούπολης.

13:15 Δρ. Αναστάσιος Βαβούσκος, Τα εκκλησιαστικά κειμήλια ως τμήμα της πολιτιστικής κληρονομιάς και η νομική υποχρέωση του ελληνικού Κράτους για την προστασία τους.

13:30 Συζήτηση & παρεμβάσεις

13:40 Ξενάγηση στους χώρους της Σχολής και του Καθολικού της Ι. Μονής
Λήξη πρωινής συνεδρίασης

Απογευματινή Συνεδρίαση

Προεδρεύουν: Δρ. Χρήστος Καρύδης & Δρ. Ελένη Κουλουμπή

16:30 Νικόλαος Σαλαμούρης, Τα βυζαντινά & μεταβυζαντινά κειμήλια σε Τουρκικά μουσεία.

16:45 Δρ. Νικόλαος Ζαχαριάς, Συνδυαστικές μελέτες αυθεντικότητας και μη-καταστροφικών αναλυτικών προσεγγίσεων σε έργα τέχνης της πολιτιστικής κληρονομιάς.

17:00 Δρ. Ελένη Κουλουμπή, Οι δυτικοευρωπαϊκές επιδράσεις στη μεταβυζαντινή τέχνη της Κρήτης και των Ιονίων Νήσων.

17:15 Διάλειμμα

17:45 Δρ. Αρτέμης Οικονόμου, Οι φυσικοχημικές αναλύσεις ως απαραίτητο εργαλείο στη συντήρηση & διατήρηση αντικειμένων πολιτιστικής κληρονομιάς.

18:00 Δρ. Δημήτρης Τσιποτάς, Μια διεπιστημονική μελέτη της κατάστασης διατήρησης και μεθοδολογίας συντήρησης του παλαιοχριστιανικού ψηφιδωτού στο ιερό του Απόλλωνα Ερεθιμίου στη Ρόδο.

18:15 Γεώργιος Μαστροθεόδωρος, Μικροσκοπικές και φυσικοχημικές τεχνικές ανάλυσης: εφαρμογές στη διερεύνηση των υλικών κατασκευής των φορητών εικόνων.

18:30 Συζήτηση, παρεμβάσεις των προσκεκλημένων, σύνοψη & συμπεράσματα

19:00 Λήξη της 1^{ης} Ημερίδας Συντήρησης & Μελέτης Εκκλησιαστικών Κειμηλίων

LUMIDOZ 8, INTERNATIONAL
CONFERENCE ON LUMINESCENCE AND
ESR DOSIMETRY, AUGUST 27 - 29, 2014,
INSTITUTE OF NUCLEAR SCIENCES,
ANKARA UNIVERSITY, TURKEY

Institute of Nuclear Sciences, Ankara University (Turkey) is inviting you to participate to International Conference on Luminescence and ESR Dosimetry (LumiDoz 8). The conference will take place at the Institute of Nuclear Sciences, Ankara University, in Ankara-Turkey, between 27th and 29th August 2014.

The conference hopes to attract researchers with fundamental and applied research presentations covering luminescence mechanisms, new luminescent materials, applied radiation physics, dosimetry, detection of irradiated foods, archaeological and geological dating and other related issues and technological applications. The conference is bilingual, both English and Turkish contributions are welcome.

Proceedings of both oral and poster presentations -those eligible for peer-reviewed publication- will be published in Journal of Nuclear Science (limited to one first-author paper per active participant). The web page of the conference is <http://lumidoz.en.ankara.edu.tr/>. You may find detailed information about registration, accommodation and deadlines here. You can also reach us by email at lumidoz@ankara.edu.tr.

On behalf of the Organising Committee of Lumidoz8.

Dr. Georgios S. Polymeris
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GEOARCHAEOLOGICAL SYMPOSIUM,
CARBONATE DEPOSITS IN
ARCHAEOLOGICAL CONTEXT, A MEMORY
OF WATER MANAGEMENT, SEPTEMBER 19-
20, 2014, CALL FOR COMMUNICATIONS

Please send proposed communications (oral and/or poster) by providing a title, authors and an abstract limited to 500 words, before June 22nd, 2014 to the following email address : julien.curie@u-bourgogne.fr

Continental carbonate deposits precipitated by hot (travertine) or cold (tufa, speleothems) waters have been used for many years as reliable palaeoenvironmental indicators. Their study in (off-site or intra-site) archaeological context offers a considerable potential for understanding **water management by human societies**.

Preserved near and/or in various anthropogenic structures, these carbonate deposits are a window on the exploitation of springs and the use of their waters, thus representing **an actual memory of water management**.

This symposium is an opportunity to provide **the state of the art** on the question of **anthropogenic carbonate deposits** and their contribution to archaeological questions. It will shed more light on these sedimentary archives by means of **an interdisciplinary dialogue** which benefits from advances in analytical techniques that allow collection of high resolution signals.

The communications and discussions of the symposium can be submitted for a special publication at MAE Editions.

Organising committee

Christophe Petit (Paris 1 University / ArScAn, *Archéologies Environnementales*)

Julien Curie (Paris-Sorbonne University)

Cees Passchier, Gül Sürmelihiindi (Mainz University)

with the support of

John Scheid (Collège de France)

Sophie Bouffier (MMSH, Aix-Marseille University)

Maison Archéologie et Ethnologie - René Ginouvès

Nanterre Campus University

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

Program

Tuesday 19-8-2014

Plenary

Ingeborg Levin

Fifty Years of Bomb-Radiocarbon Application in Environmental Sciences

Coffee

Atmosphere – Radiocarbon and stable isotopes in the Environment: the use of carbon isotopes in global carbon cycle research

Levin

1. 11.50 – 12.10

Richard Staff

A comparison of the Greenland ice-core and Intcal timescales around the timing of the Laschamp geomagnetic excursion utilising new ^{14}C data from Tenaghi Philippon, Greece

2. 12.10 – 12.30

Heather Graven

Projections of atmospheric radiocarbon content to 2100

3. 12.30 – 13.00

Lucas Wacker

Fast changes in atmospheric radiocarbon concentrations in the past

13.00 – 14.30 Lunch

Atmosphere – Radiocarbon (and stable isotopes) in the urban environment

Hammer & Vogel

4. 14.30 – 14.50

Dr Mirosław Zimnoch

Partitioning of atmospheric carbon dioxide using isotope tracers – case study from the urban area of Krakow, southern Poland

5. 14.50 – 15.10

Dr Samuel Hammer

^{14}C supported interpretation of long-term atmospheric trace gas records in the Heidelberg urban environment

6. 15.10 – 15.30

Dr Jocelyn Turnbull

The Indianapolis Flux Project (INFLUX): Development and assessment of methods for urban greenhouse gas

15.30 – 16.00 Coffee

7. 16.00 – 16.20

Dr Sally Newman

Temporal variations in fossil fuel emissions in the Los Angeles megacity

8. 16.20 – 16.40

Dr Laura E. Beramendi-Orosco

Temporal and spatial variations of atmospheric radiocarbon in Mexico City

9. 16.40 – 17.00

Dr Soenke Szidat

Fossil and non-fossil sources of carbonaceous aerosols at urban and rural sites in Switzerland during winter-smog episodes

17.00 – 18.30 Poster Session

Wednesday 20-8-2014

Field Trips

Thursday 21-8-2014

**Techniques – Applications of ^{14}C in Forensic Science
Cook**

1. 09.00 – 09.20

Alastair Ruffel

2. 09.20 – 09.40

Gordon Cook

Radiocarbon analysis of modern skeletal remains to determine year of birth and death

**Marine – Radiocarbon and stable isotopes in marine environments
Paula or Stuart Fallon**

3. 09.40 – 10.00

Stuart Fallon

Using radiocarbon in coral skeletons to reconstruct seawater pH at Milne Bay, PNG

4. 10.00 – 10.20

Jesper Olsen

North Atlantic surface ocean ^{14}C variability between 30 – 40 kyr. BP

10.30 – 11.00 Coffee

5. 11.00 – 11.20

Yorgos Facorellis

Sea surface radiocarbon reservoir age changes in the Aegean Sea from 13,000 cal BP to present

6. 11.20 – 11.40

Alexander Cherkinsky

^{14}C Variations in pre-bomb near shore habitats of Florida Panhandle, U.S.A.

7. 11.40 – 12.00

Hellen Cristine Santos

Marine reservoir correction in North-eastern of Brazil obtained from annually-banded *Mussismilia braziliensis* coral

8. 12.00 – 12.20

Kerry Allen

Contribution of sewage organic matter to the diet of the common limpet near the former outflow at Blackhead, Northern Ireland

12.30 – 14.00 Lunch

**Marine – Radiocarbon as a tracer for Southern Ocean Exchange
Turnbull and Lindsay**

9. 14.00 – 14.20

Dr Jocelyn Turnbull

Long-term variability in Southern Hemisphere $\Delta^{14}\text{CO}_2$ from the Wellington record

10. 14.20 – 14.40

Mr Colin Lindsay

Southern Ocean carbon sink constraints from radiocarbon in Drake Passage air

11. 14.40 – 15.20

Laura Robinson

Southern Ocean Radiocarbon records from deep-sea corals

12. 14.40 – 15.20

Mr David Munro

Assessing changes in vertical entrainment in the Drake Passage of the southern ocean using observations of radiocarbon and surface CO_2

15.30 – 16.00 Coffee

**Marine - Oceanographic variability using radiocarbon, stable isotopes and other
geochemical tracers
Olsen**

13. 16.00 – 16.20

Alexandra Jahn

Carbon isotopes as oceanographic tracers in the ocean model of the CESM

14. 16.20 – 16.40

Ann McNicholl

Radiocarbon in the Canada Basin: Carbon Transfer Processes in the Changing Arctic

15. 16.40 – 17.00

Laura Reynolds

Radiocarbon Reservoir Variability in California Estuaries

16. 17.00 – 17.20

Michael Sarnthein

Glacial-to-deglacial patterns of change in planktic and benthic reservoir ages: Indicators of oceanographic and carbon cycle variations.

Thursday Parallel 21-8-2014

**Marine – Bomb radiocarbon dating of marine organisms: research and application
Allen Andrews**

1. 9.00 – 9.30

Allen Andrews

Bomb radiocarbon dating of marine organisms: research and application

2. 9.30 – 9.50

Heather Christiansen

Challenges of using bomb radiocarbon to validate ages of a highly mobile apex predator, the white shark, from the Southern Hemisphere

3. 9.50 – 10.10

Jesse Farmer

Transfer of Bomb Radiocarbon to the Intermediate Ocean: Reconstructions from North Atlantic Bamboo Corals

4. 10.10 – 10.30

Nadine Tisnerat-Laborde

Bomb radiocarbon chronologies of *Lophelia pertusa* and *Madrepora oculata* cold-water corals

10.30 – 11.00 Coffee

Freshwater – Carbon routing in freshwater environments

Fernandes & Dreves

5. 11.00 – 11.30

Tim Jull

6. 11.30 – 11.50

Ricardo Fernandes

Towards a better understanding of the variability in radiocarbon reservoir effects within freshwater contexts

7. 11.50 – 12.10

Evelyn Keaveney

Carbon in the food web of an alkaline humic lake: a $\Delta^{14}\text{C}$, $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ approach

8. 12.10 – 12.30

Natoya F. Ishikawa

Use of radiocarbon natural abundances and compound-specific isotope analyses for stream food web research

12.30 – 14.00 Lunch

Techniques - Radiocarbon in environmental monitoring of nuclear facilities

Molnar, Povenec & Svetlik

9. 14.00 – 14.30

Roland Purtschert

Monitoring ^{14}C and ^{37}Ar in the Environment of Swiss Nuclear Facilities

10. 14.30 – 14.50

Pavel Povinec

Forty-five years of atmospheric radiocarbon variation studies in Bratislava and at the Bohunice nuclear power plant

11. 14.50 – 15.10

Mr Róbert Janovics

^{14}C impact of a near field radioactive waste disposal facility in a nearby tree

12. 15.10 – 15.30

Mihály Molnár

Study of dissolved organic C-14 level in the groundwater monitoring network of a radioactive waste disposal facility

15.30 – 15.50 Coffee

Techniques - ^{14}C and Energy Production: Nuclear fuel to Bio-fuel

Muir

13. 15.50 – 16.10

Graham Muir

Anomalous ^{14}C Enrichments in the Eastern UK Coastal Environment

14. 16.10 – 16.30

Kieran Tierney

Accumulation of Sellafield-Derived Radiocarbon (^{14}C) in Irish Sea Intertidal Sediments

15. 16.30 – 16.50

Sanne W.L. Palstra

¹⁴C-based determination of biogenic fractions in fuels and flue gases: methodological uncertainty issues

**Techniques - Radiocarbon and palaeoenvironmental reconstruction in practice
Patterson & Trainor**

1. 16.50 – 17.10

Bettina Steffani

Exploring evidence for alternative chronologies, and pathways of recycled carbon within an ombrotrophic peat sequence from Ballyduff Bog, Tipperary, Ireland.

2. 17.10 – 17.30

Julie Morin-Rivat

Does the identification of charred botanical remains provide more accurate information on the past history of Central African rainforests?

1. 17.30 – 17.50

Ramyabala Prabhakaran

Variations associated with pre-treatment method in radiocarbon age measurement from mineral rich peat, India

7:30 pm Gala Dinner

Friday 22.8.2014

**Terrestrial - Radiocarbon applications in natural soils
Martinsen, Mills & Tipping**

1. 09.00 – 09.20

2. Christine Hatté

Global understanding of vertical soil carbon dynamics: meta-analysis of soil ¹⁴C data.

3. 09.20 – 09.40

Edward Tipping

Long-term organic carbon turnover rates in natural and semi-natural topsoils

4. 09.40 – 10.00

Hannah Toberman

¹⁴C in British Soils

5. 10.00 – 10.20

Jens Leifeld

The soil's radiocarbon signature – an indicator for soil carbon dynamics and vulnerability

6. 10.20 – 10.40

Tessa van der Voort

Radiocarbon as a tool to assess organic matter vulnerability across different regions in Swiss soils

10.40 – 11.00 Coffee

Terrestrial – Radiocarbon and stable isotopes in terrestrial environments

Ascough

7. 11.10 – 11.30

Alexander Cherkinsky

^{14}C content in Chilean Fitzroya cupressoides tree ring 1500-1950 AD

8. 11.30 – 11.50

Ichiro Tayasu

Use of carbon-14 in terrestrial food webs

9. 11.50 – 12.10

Israel Carmi

Variations in the isotopic compositions of dissolved inorganic carbon and of moisture in the unsaturated zone of a semi-arid region due to biotic and a-biotic processes

10. 12.10 – 12.30

Shambhu Prasad Sah

Do C- and N-sources change in the decaying log of boreal spruce forest; an isotopic approach

12.30 – 14.00 Lunch

Terrestrial - Dissolved organic carbon, methane and carbon dioxide in soil and aquatic environments

Bryant, Keaveney and Ascough

11. 14.00 – 14.20

Pauline Gulliver

Extraction and analysis of sub-milligram per litre concentrations of Methane from Groundwater for ^{14}C analysis

12. 14.20 – 14.40

Pauline Gulliver

^{14}C and ^{13}C signatures of CH_4 and CO_2 from landfill associated gases in the UK.

13. 14.40 – 15.00

Evelyn Keaveney

Investigating carbon cycling in a complex lake: a novel use of $\Delta^{14}\text{C}$

15.00 – 15.30 Coffee

14. 15.30 – 15.50

Jessica Adams

Estimating Sources and Fluxes of Dissolved and Particulate Organic Matter in UK Rivers

15. 15.50 – 16.10

Leena Vihermaa

Tracing the slow turn-over C cycle in tropical fresh water

16. 16.10 – 16.30

Trent Marwich

The age of river-transported carbon: new data from African catchments and a global perspective.

16.30 – 17.30 Closing Remarks

17.30 Closing Wine Reception

School of Geography, Archaeology and Palaeoecology
Elmwood Building, Elmwood Avenue

Please visit the site: <http://www.qub.ac.uk/sites/14C/>

**CONFERENCE: INTERNATIONAL
WORKSHOP ON COMPUTER AIDED
PROCESSING OF INTERTEXTUALITY IN
ANCIENT LANGUAGES, 2ND-4TH JUNE 2014,
BÂTIMENT BLAISE PASCAL, INSA, CAMPUS
DE LA DOUA, VILLEURBANNE (FRANCE)**

See <http://liris.cnrs.fr/acces/localisation-INSa-2.htm>.

All the sessions will take place in room 501.337, on the 3rd floor.

Organizers : Marco Büchler, (GCDH), Elöd Egyed-Zsigmond (LIRIS), Laurence Mellerin (HiSoMA)

Registration needed: laurence.mellerin@mom.fr

Program : http://f.hypotheses.org/wp-content/blogs.dir/282/files/2014/04/Workshop_flyer.pdf
<http://biblindex.hypotheses.org/1686>

This workshop was initiated as the conclusive meeting of the project Biblindex, funded by the French National Research Agency (ANR), which aims at establishing an exhaustive statement of the biblical references found in the texts of the Late Antiquity and the Middle Ages. At this meeting will be gathered computer scientists and digital humanists, specialists of corpora written in ancient languages. The planned sessions aim to present the state of art regarding concepts and technics used to process quotations in ancient languages. A lot of projects work nowadays on various corpora, asking similar questions about text-reuse. Comparing experiments, we hope to clear perspectives to mutualize developments and methodological choices, in order to build a federative project at the European scale in the coming years.

The first session will be devoted to mutual project presentations. Afterwards, the various stages of quotation processing will be discussed in four workshops. The first two of them will tackle the preparation of sources and the automatic retrieval of concordant text places: interests and complementarities of statistical and linguistic approaches will be compared. The next two will focus on the conceptual definitions, the modelling of the unstable idea of “quotation” and the XML-TEI encoding to implement for its characterization, in close interdependence with visualization choices.

**TWO WEEKS EXTENSION FOR ABSTRACT
SUBMISSION TO "RADIOCARBON AND
DIET: AQUATIC FOOD RESOURCES AND
RESERVOIR EFFECTS" – KIEL,
24 AND 26 SEPTEMBER 2014**

Dear friends and colleagues,

We would like to thank all those who submitted their abstracts for the **Radiocarbon and Diet** International scientific meeting.

However, given that several colleagues requested a deadline extension we are happy to inform that abstract and grant submission will now close on **15 June 2014**.

The international meeting "**Radiocarbon and diet: aquatic food resources and reservoir effects**" will be held in Kiel (Germany) between 24 and 26 September 2014.

The meeting will address some of the following general themes:

- Past and present human exploitation of aquatic food resources
- Methods to detect an aquatic diet
- Stable isotopes and aquatic diets
- Radiocarbon reservoir effects in humans and archaeological materials (e.g. ceramics)
- Alternative methodological approaches to the detection of dietary reservoir effects (e.g. radiocarbon dating of single compounds)
- Environmental variability of aquatic radiocarbon reservoir effects
- Special cases of radiocarbon reservoir effects (e.g. plants)

Further details can be found at the meeting's website: <http://www.rre-conference.uni-kiel.de/>

Looking forward to seeing you all in Kiel this September!

Best wishes,

The organising committee:

Ricardo Fernandes

Alexander Dreves

Ingmar Unkel

John Meadows

40TH INTERNATIONAL SYMPOSIUM ON ARCHAEOMETRY, ISA 2014, MAY 19-23, 2014, LOS ANGELES, CALIFORNIA

Program

Monday 19-5-2014

STONE, PLASTER AND PIGMENTS

1.
Full-field X-ray spectroscopy offers new possibilities for the study of paintings
Pouyet, E., Cotte, M., Fayard, B., Monico, L., Mass, J., Nuyts, G., Radepont, M., Sciau, P.
2.
Trace Element and Fluid Analyses for Identification of Marbles – Systematic Provenance Analysis of the Imperial Portraits
Prochaska, W., Attanasio, D., Bruno, M.
3.
Mural Paintings in Ancient Peru: The Case of Tambo Colorado, Pisco Valley
Wright, V., Pacheco, G., Torres, H., Huaman, O., Watanave, A
4.
Identification and Characterization of Painted Wall Plasters and Mortars at Villa Silin, Libya, Using a Range of Analytical Methods: “Part 2”
Abd El Salam, S., Maniatis, Y.
5.
Characterization of plasters from different buildings of the Sacred Precinct of Tenochtitlan (Mexico City)
Miriello, D., Barca, D., Pecci, A., De Luca, R., Crisci, G.M., López Luján, L., Barba, L.
6.
An archaeometric study of Mortars taken from Rupestrian Churches in Cappadocia (Turkey)
Crisci, G.M., La Russa, M.F., Rovella, N., Ruffolo, S.A., Andaloro, M., Pelosi, C., Pogliani, P.
7.
Validating Roman Descriptions of Harbor Concretes through Fine-Scale Archaeometric Studies
Jackson, M.D., Oleson, J.P.
8.
GC/MS, Proteomics and Imaging techniques to reconstruct materials and techniques of the Western and Eastern Buddhas of the Bamiyan valley (Afghanistan)
Lliveras-Tenorio, A., Birolo, L., Blaensdorf, C., Bonaduce, I., Cotte, M., Galano, E., Pouyet, E., Colombini, M.P.
9.
Angkorian Stone Materials from 9th century Hariharalaya Workshop and the Temples of Bakong and Preah Kô
Douglas, J.G., Carò, F., Polkinghorne, M.

10.

Technical Examination of the Red Queen's Burial Offering of the Maya site of Palenque, Mexico

Manrique Ortega, M.D., Ruvalcaba Sil, J.L., Claes, P., García Bucio, M.A., Casanova González, E., Wong Rueda, M., Maynez Robles, M.A., Delgado Robles, A.A., González Cruz, A., Cuevas García, M.

CERAMICS, GLAZES, GLASS AND VITREOUS MATERIALS

11.

Technological Development in Vinča Culture Pottery at the Dawn of the Metal Age

Amicone, S., Quinn, P., Radivojević, M., Rehren, T.

12.

Tracing Grog, Pots and Neolithic Baltoscandian Corded Ware Culture Contacts (SEM-EDS, PIXE)

Holmqvist-Saukkonen, E., Larsson, Å.M., Kriiska, A., Palonen, V., Mizohata, K., Nissinen, T., Oinonen, M., Räisänen, J.

13.

Compositional variability of archaeological ceramics in the Eastern Mediterranean and implications for the design of chemical provenance studies

Hein, A., Kilikoglou, V.

14.

Provenance of Late Punic and Roman-Byzantine ceramic materials at Carthage (Tunisia). A view from the mercantile harbor and Tophet

Braekmans, D., Garnand, B.K., Greene, J.A., Stager, L.E., Degryse, P.

15.

Looking for the Main Production Site of Middle Byzantine Pottery

Waksman, Y., Skartsis, S.S., Kontogiannis, N.D., Vaxevanis, G.

16.

Technical Analysis of Safavid Ceramics

Eremin, K., Domoney, K., McWilliams, M., Mason, R., Carey, M., Ferguson, P., Leoni, F.

17.

Revisiting the Beginnings of Tin-opacified Islamic Glazes

Tite, M., Pradell, T., Molina, G., Domoney, K., Watson, O., Bouquillon, A.

Tuesday 20-5-2014

STONE, PLASTER AND PIGMENTS

18.

Non-Destructive Analysis of Olmec Green Stone Figurines and Axes from La Venta's Offering 4

Claes, P., Ruvalcaba Sil, J.L., Filloy, L., Wong Rueda, M., García Bucio, M.A.

19.

Provenance Analysis of 1500 Obsidian Artifacts from 40+ Sites in Sicily (Italy)

Tykot, R.H., Freund, K.P., Vianello, A.

20.

Magnetic and Geochemical Characterization of Georeferenced Obsidian Samples from Four Source Areas in New Mexico

Sternberg, R., Shackley, M.S., Feinberg, J.M., Steffen, A., Freeman, A., Gregovich, A., Hackett, C., Harrison, M., Kim, M., Osborne, Z., Pollen, A., Regier, M., Roth, K., Samuels, R.

21.

First use of portable system coupling X-ray diffraction and X-ray fluorescence for in-situ analysis of prehistoric rock art - Rouffignac cave (France)

Beck, L., Rousselière, H., Castaing, J., Duran, A., Lebon, M., Plassard, F. –

22.

Purple in Sumhuram, Oman (1st-2nd Century AD), Revealed by Mass Spectrometric and Chromatographic

Ribechini, E., Degano, I., Zanaboni, M., Pavan, A., Colombini, M.P., Pérez-Arantegui, J.

CERAMICS, GLAZES, GLASS AND VITREOUS MATERIALS

23.

Technology and Indigeneity in Mughal Glazed Tile-Work

Gill, M.S., Rehren, T.

24.

Plumbate Ceramic Ecology

Neff, H., Garfin, T., Burger, P., Niespolo, E.

25.

Paradise for Petrographers: Tracking Movements of Lapita Pottery (1200-900 cal BCE) between New Caledonia, Isle des Pins, the Loyalty Islands and Vanuatu

Killick, D., Chiu, S., Sand, C., Dickinson, W.R.

26.

Technological Change and Provenance of Glass in Early Islamic Palestine

Phelps, M., Freestone, I., Gratuze, B. Lankton, J.

27.

Origin and Development of Blue-and-White Porcelain in Ancient China

Li, W., Lu, X., Liu, L., Sun, X. –

28.

XRF Analysis of Vincennes-Sèvres Porcelain: Characterization, Dating and Attribution

Domoney, K., Shortland, A.J., Kuhn, S., Megens, N.

METALS AND METALLURGICAL CERAMICS

29.

How To Cook your Met(al): Reconstructing The World's Earliest Metallurgy

Radivojević, M., Boscher, L., Timberlake, S., Asmus, B., Radivojević, J., Chen, K., Rehren, Th.

30.

Metal and Elites in Upper Mesopotamia - Uniqueness or Uniformity?

Franke, K.A. –

31.

Aspects on the introduction of tin in the Aegean during the 2nd millennium BC

Bassiakos, Y., Mastrotheodoros, G., Filippaki, L.

32.

Physical Barriers, Cultural Connections: Ancient Metallurgy Across the Alpine Region

Perucchetti, L., Bray, P., Pollard, A.M.

33.

ICP-AES Analysis of Bronze age based Copper Artefacts from the West of France. The specific chemical signatures of hoards as a function of the region and the typochronology

Le Carlier, C., Le Bannier, J.C., Marcigny, C., Fily, M.

34.

Elemental and Lead Isotopic Data of Copper Finds from the Singen Cemetery, Germany – a Methodological Approach to Investigate Early Bronze Age Trade Networks

Villa, I.M., Cattin, F., Merkl, M.B., Strahm, Ch.

FROM THE BRONZE AGE TO THE IRON AGE

35.

Time and context of change at the close of the Late Bronze Age and in the early Iron Age
Manning, S.W.

36.

Copper in the Iron Age

Kassianidou, V.

37.

Crisis in Context: The End of the Late Bronze Age in the Eastern Mediterranean

Knapp, A.B.

38.

An Isotopic Trip through First Millennium BC Glass History

Blomme, A., Elsen, J., Degryse, P.

39.

Small Compositional Groups, Production Events and the Organisation of Production

Freestone, Ian University College London

Wednesday 21-5-2014

ARCHAEO-CHRONOMETRY

40.

Extending the Luminescence Dating Range to the full Quaternary

Ankjærgaard, C., Kuiper, K.F., Porat, N., Jain, M., Wijbrans, J.R., Wallinga, J.

41.

Recent advances in Geochronology and geochemistry applied to human fossil remains: maximizing the information with minimal damage

Joannes-Boyau, R.

42.

New Evidence with Radiocarbon for the Appearance of the Earliest Farmers in the Aegean

Maniatis, Y., Kotsakis, K.

43.

Radiocarbon dating of old plasters and mortars. An overview of the last 5 years application of the “pure lime lumps” technique

Pesce, G.L., Vecchiattini, R., Ball, R.J.

44.

A New Approach for Combining Historical, Archaeological, and Scientific Chronologies

Höflmayer, F., Burke, A.A.

FORENSIC SCIENCE INVESTIGATIONS IN ART AND ARCHAEOLOGY

45.

More than meets the eye: Fiber Analysis and Manuscripts from the Silk Roads

Helman-Ważny, A.

46.

Improving lateral resolution of isotopic measurements of ancient glasses using spatially resolved ion beam microanalysis: the LA case

Boehnke, P., Harrison, M. Kakoulli, I.

47.

Testing the authenticity of the Sky Disc of Nebra

Pernicka, E.

48.

Beyond the UNESCO Convention: the Case of the Troy Gold in the Penn Museum

Rose, B.

49.

Acquiring antiquities for museums: ethics, policy, and analysis

Potts, T.

50.

Panel and open forum: forensic science investigations in art and archaeology

HUMAN ENVIRONMENT INTERACTIONS AND BIO-MATERIALS BIOARCHAEOLOGY

51.

Pushing the Limits of Fatty Acid Stable Carbon Isotope Analysis in the Archaeological Record

Evershed, R.P., Salque, M., Cramp, L., Pääkkönen, M., Outram, A.

52.

Characterizing changing animal management practices, land use strategies and Palaeoenvironments through time in the North Atlantic Islands: an isotopic approach

Jones, J.R., Nordgren, E., Mulville, J.

53.

Mobility and Diet in the Bronze Age West Eurasian Steppes: A Multi-Isotope Approach

Gerling, C., Pike, A., Heyd, V., Kaiser, E., Parzinger, H., Schier, W.

54.

Hopanoids as Biomarkers of Pulque in Mesoamerica

Correa Ascencio, M., Robertson, I., Cabrera Cortés, O., Cabrera Castro, R., Evershed, R.P.

55.

Transalpine mobility and culture transfer from the Urnfield Culture into Roman times: Isotopic mapping of a Central European Alpine passage

Grupe, G., McGlynn, G.C.

56.

Changing Coastal Resource Use in the Bronze and Iron Ages at Ra's al-Hadd, Oman

Cartwright, C.

57.

The DNA sequencing revolution: new opportunities for biomolecular archaeology

Brown, T.

HUMAN ENVIRONMENT INTERACTIONS AND BIO-MATERIALS BIOARCHAEOLOGY

58.

Medicinal Clays and ‘Earths’: from geo-archaeological research to microbiological testing

Photos-Jones, E., Keane, C., Stamatakis, M., Hall, A.J., Leanord, A.

59.

Integration of advanced analytical techniques in the studies of the Dead Sea Scrolls

Rabin, I. –

60.

Ethno-archaeology of Salt Supply during the Neolithic and Chalcolithic in the Romanian Carpathians

Alexianu, M.T., Asandulesei, A., Tencariu, F-A, Sandu, I, Romanescu, G., Curca, R-G., Asandulesei, M.

61.

Identification of Ancient Varnishes: Development of Adapted Methods in GC-MS(/MS)

Azémard, C., Ménager, M., Vieillescazes, C.

REMOTE SENSING, GEOPHYSICAL PROSPECTION AND FIELD ARCHAEOLOGY

62.

Applications in Landscape Analysis and Cultural Resource Management for Hyperspectral Satellite Imagery

Middleton, W.D., Joyce, A.A., Messinger, D.W., Canham, K., Goman, M., Borejzsa, A., Mueller, R.

63.

2D-ERT Geophysical Characterization of the Plaza de Santo Domingo, Mexico City

Argote-Espino, D., Paz-Arellano, P., Tejero-Andrade, A. López-García, P.

64.

Different possibilities and combinations of geophysical methods in the research of various types of archaeological sites with changed landscape and land use – case studies from Bohemia, Czech Republic

Křivánek, R.

65.

Characterization of Structures at Sant’Ansano Excavation Site in Allerona, Italy using Portable Spectroscopy

Donais, M.K. , Duncan, B., Vandenabeele, P., George, D.

66.

Integrating Multi-Element Geochemical and Magnetic Surveying by Spatial Clustering: the Suburban Sagalassos Case, SW-Turkey

Dirix, K., Rogiers, B., Muchez, P., Degryse, P., Mušič, B., Poblome, J.

67.

Photon Physics Role in Creation, Art and Archaeology

Kaiser, B.

68.

Cobmbined SEM and Raman spectroscopy: a powerful analytical tool for archaeometry

King, A.

METALS AND METALLURGICAL CERAMICS

69.

Heaps and Heaps of it: Analysis of Kushan-Sassanid Metallurgical Remains from Mes Aynak, Eastern Afghanistan

Eley, T., Boscher, L., Georgakopoulou, M.

70.

Crucible or furnace: a comparative study of silver production traditions in north and south China

Liu, S., Rehren, T., Qin, D., Chen, J.

71.

Iron and the Khmer Empire, Cambodia (9th to 15th c.): first study on the sourcing and dating of iron construction materials of Angkor

Leroy, S., Hendrickson, M., Delqué-Kolic, E., Vega, E., Dillmann, P.

72.

Archaeometallurgy of Metal Finds from the Medieval “Royal” Burials of Durbi Takusheyi, Northern Nigeria

Fenn, T.R., Ameje, J. Gronenborn, D., Ruiz, J.

73.

Outside the gates - Metalworking around medieval and post medieval Copenhagen

Jouttijärvi, A.

74.

Copper production at El Coyote Honduras: The first evidence for copper smelting in Central America

Shugar, A., Urban, P., Schortman, E.

75.

Goldsmiths or Wax Sculptors? Individual Skill and Social Agency in Muisca metalwork (Colombia, AD 600-1800)

Martinón-Torres, M. Uribe, M.A.

Friday 22-5-2013

CERAMICS, GLAZES, GLASS AND VITREOUS MATERIALS

76.

Micro-invasive and non-invasive techniques applied to Italian Renaissance Terracotta Sculptures: Provenance and chronological issues of Della Robbia Collections in Portugal

Dias, M.I., Prudêncio, M.I., Kasztovszky, Z., Kovács, I., Szokefalvi-Nagy, Z., Flor, P.

77.

First Archaeometrical Data of Glass from Sarno Necropolis (9th – 6th Century BC)

Conte, S., Arletti, R., Merlati, F.

78.

Boron Isotopic Composition of Roman Natron Glasses to Provenance the Flux Raw Material

Devulder, V., Vanhaecke, F., Shortland, A., Mattingly, D., Degryse, P.

79.

Iron Age Glass from Myanmar: Addressing Provenance Issues with Trace Element and Isotopic Compositions

Dussubieux, L., Pryce, T.O.

80.

Characterization and contemporary replicas of Art Nouveau coloured glass
Fornacelli, C., Bracci, S., Memmi Turbanti, I., Picollo, M., Vilarigues, M., Troeira, M.
81.

Glass Chemical Analysis: Assessing the New Heterarchy
Lankton, J.W., Gratuze, B., Cholakova, A., Freestone, I., Phelps, M., Rehren, T.
82.

Glass and Diagrams: a Review (Roman and Medieval glasses from the Mediterranean area)

Gliozzo, E

POSTER SESSION I

Getty Villa, Monday and Tuesday, May 19-20

STONE, PLASTER AND PIGMENTS

83.
Multi-Analytical Investigation on Greco-Roman Wall Paintings: The Case of Tuna El-Gabal Funerary Houses, Upper Egypt
Mona Abdel-Ghani, Fatma S. Madkour

84.
Analysis of Colored Archaeological Fibers from Taira, north of Chile.
Tomás Aguayo, Marcela Sepúlveda, Patricio De Souza, Celine Paris and Ludovic Bellot-Gurlet

85.
Investigation study of using Laser-Induced Breakdown Spectroscopy (LIBS) on analysis of Historical Embroideries
Harby E. Ahmed, Yuan Liu, Matthieu Baudet, Martin Richardson

86.
Archeological materials of the submerged site of Baia (Naples, Italy): production technology of mortars and bricks
Piergiorgio Aloise, Silvestro Antonio Ruffolo, Mauro Francesco La Russa, Cristina Maria Belfiore, Donatella Barca, Gino Mirocle Crisci

87.
Rock Art at Morro Azul caves in Paraná State, Brazil: an in situ XRF and Raman study
C. R. Appoloni, C. I. Parellada, F. L. Melquiades, E. I. Jussiani, F. C. Pereira and F. Lopes

88.
An Analytical Study of the Inorganic Materials Used in the Funerary Wall Paintings of Ancient Macedonia
Lydia Avlonitou

89.
A multi-disciplinary approach for studying Michelangelo's drawings
S. Bracci, M. Barucci, R. Fontana, M. Marongiu, E. Pampaloni, C. Riminesi, J. Striova
90.

Features of a Roman Clay Plaster (Brixia, Lombardy, Italy)
Roberto Bugini, Cristina Corti, Luisa Folli, Laura Rampazzi

91.
Influence of synthesis conditions on growth of Egyptian blue

Manuela Catalano, Andrea Bloise, Domenico Miriello, Safaa Abd El Salam, Gino Mirocle Crisci

92.

Petroarchaeology and Architectural Stratigraphic Research of the Visconteo Castle in Locarno, Switzerland

G. Cavallo, C. Lumia and M. P. Riccardi

93.

Use-wear Evidence and Functional Information on Lithic Tools at Wulanmulun site, Inner Mongolia, China

Hong Chen, Yamei Hou, Zemeng Yang, Ziming Zhen, Huiru Lian, Yang Liu

94.

Characterization of Natural and Artificial Stone Materials from S. Niccolò Archaeological Complex in Montieri (Tuscany, Italy)

Nicoletta Chiarelli, Domenico Miriello, Andrea Scala, Giovanna Bianchi, Jacopo Bruttini, Giuseppe Fichera, Marco Giamello, Isabella Turbanti Memmi

95.

The use of huntite in the antiquity. A review with respect to ongoing studies in the archaeological site of Hierapolis in Phrygia (Turkey)

F. D'Andria, S. Bracci, E. Cantisani, T. Ismaelli, C. Riminesi, B. Sacchi, G. Scardozzi, S. Vettori

96.

Mobile Hyper-spectral imaging for the non-invasive study of a mural painting from the Belvès Castle (France, 15th C)

F. Daniel, A. Mounier, Y. Lefrais

97.

Non-Destructive Analysis of Green Stone Royal Burial Offerings from the Maya Site of Palenque, Mexico

A.A. Delgado Robles, M.D. Manrique Ortega, P. Claes, E. Casanova González, J.L. Ruvalcaba Sil, M. Maynez Rojas, M. Cuevas García

98.

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The archaeological site of Luni: first archaeometrical results on the glass findings

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Not first but fast: on the Bronze-Iron Age transition in mainland Southeast Asia

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Beads Culture of Early Myanmar, Doorway to Southeast Asia

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Persian Crucible Steel Production: Chāhak Tradition

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Erez Ben-Yosef, Thomas E. Levy

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Experimental and Analytical Investigation of Black Bronze Alloys

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Alice Boccia Paterakis, Sachihito Omura, Ellen van Bork

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Analytical Study of Andean Precolumbian Metallurgy by Energy Dispersive X-Ray Fluorescence

Jorge A. Bravo, Mirian E. Mejia, Mercedes Delgado, Alejandro L. Trujillo

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Copper Supply During the Third Millennium BC (Late Neolithic and Bell Beaker) from the Pyrénées to the Western Alps

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Gold in Palaepaphos (Cyprus): A Study of Artifacts from the Early Iron Age Necropolis of Skales using Portable X-Ray Fluorescence Spectrometry (pXRF)

Andreas Charalambous, Vasiliki Kassianidou, George Papasavvas

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Evidence of arsenical copper smelting of Bronze Age China: a preliminary study of slag discovered at the Laoniupo Site, Central Shaanxi

Kunlong Chen, Yanxiang Li, Lianjian Yue

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New Insights to the Early 19th-Century Naval Technology: Metallurgical Examination of the Cargo of a British Transport Lost Off Catalonia Coast, Spain

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Breaking Fad: Pushing the Boundaries of Metallurgical Communities at The Cenote Sagrado

Bryan Cockrell, José Luis Ruvalcaba Sil, Edith Ortiz Díaz

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Thracian Silver Artifacts from Romanian and USA Museums – the Same Provenance Workshop

Bogdan Constantinescu

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Neutron diffraction characterization of pre-Roman coinage from northern Italy: silver debasement and relationships within different emissions

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Comparison Between Quantitative (ICP-OES) and Qualitative (pXRF) Data of Iron Slag from Sagalassos (SW-Turkey)

Kim Eekelers, Rebecca Scott, Patrick Degryse, Phillipe Muchez

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Methodological Development for the Decomposition of Ancient Iron Slags for ICP-OES Analysis

Kim Eekelers, Elvira Vassilieva, Phillipe Muchez, Patrick Degryse

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Mill scale on historic wrought iron: characterisation and impact on corrosion behaviour

Nicola Emmerson, Eric Nordgren, David Watkinson

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From sculptures to foundries: elemental compositional analysis to trace modern bronzes provenance

Monica Ganio, Francesca Casadio, Katherine Faber, Anne Leonard, Johanna Salvant, Marc Walton

176.

Gilded and Silvered Artefacts from Medieval Tuscia (Italy): Materials and Technological Features

Mainardo Gaudenzi Asinelli, Marcos Martín-Torres

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In the middle of it all: metallurgy in Early Bronze Age Palamari (Skyros island, Aegean)

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On the Distribution of European Copper Artifacts in Northeastern North America

R.G.V. Hancock, J.-F. Moreou, K. Lulichelaki, W. Foxa

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The Importance of Kestel in Anatolian Metal Supply

Philly Howarth, Mark Pollard, Peter Bray

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Exploitation of Manganese-Rich ‘Ore’ to Smelt Iron in Mwenge, Western Uganda

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The metallographic and lead isotopic research on several bronze weapons corresponding to origination of Qin Dynasty

Lajiang Jia, Pujun Jin, Congcang Zhao, Xue Lin, Xiaogang Yang, Puheng Nan

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Combine XRD, Metallography and Radiography Analysis of Metal and Corrosion Products for Luristan Bronzes, Iran

Zahra Karamad, Zahra Nikoei

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Theodora Arvaniti, Yannis Maniatis

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Embracing In-Homogeneity in Archaeomagnetism: Implications for Sampling and Analysis

Eric Blinman, J. Royce Cox.

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Dating results of new palaeoenvironmental studies conducted in South Peloponnesus, Greece

John Christodoulakis, Yannis Bassiakos, Evangellos Tsakalos, Maria Kazantzaki

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Back to Basics: Understanding the Major Factors Affecting Absorbed Organic Residue Preservation in Archaeological Ceramics

Marisol Correa Ascencio, Richard P. Evershed

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The Rectorate Building of the University of Cagliari (18th century): metrological, chronological and material analysis of masonries

Caterina Giannattasio, Silvana Maria Grillo

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Rehydroxylation Dating of Pre-Hispanic and Colonial Fired-Clay Artifacts from Aguascalientes, Mexico

Becket Lailson, Jose R. Alvarez, Jorge Balmaseda, Ana M. Pelz, Nicolás Caretta, Niklas Schulze, Marisol Martínez, Eli Puch

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Comparative Study of Two Etruscan Bucchero Amphoras

Elena Minina, A. Mazina, S. Sokolov

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Putting a Puzzle Together: A Roman Bronze Lamp from Kavastu (Estonia)

Ester Oras, Thomas Higham, Ian D. Bull, Lucy Cramp

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Radiocarbon Dating of Pacific Island Wooden Figures: Multiple Analyses Produce Better Age Determinations

Christine A. Prior

192.

Reexamining the Archaeology of the Colorado Plateau (USA) Using Radiocarbon Dating of Collected Wood

Dana Drake Rosenstein, Ronald H. Towner, Gregory W.H. Hodgins and Jeffrey S. Dean

193.

The First Experience of Comparative Radiocarbon Dating of Archaeological Monuments of Late Bronze Age Southern Transurals

I.A.Shuteleva, T.A.Leonova

194.

Dating of Submerged Landscapes by Electron Spin Resonance

Anne R. Skinner, Justin K. Dix, Edward Cho, Fraser Sturt, Justin P. Mangope, Bonnie A. B. Blackwell

195.

Geochronology of the Royal Tomb at Ulaankhermiin Shoroon Bumbagar, Mongolia

S. Solongo, A.Ochir, S.Tengis, K.Fitzsimmons

196.

Luminescence Dating for Artefacts and for Field Studies: Alterations, Variations and the Context

N. Zacharias

197.

Quaternary Palaeoenvironmental Reconstruction of the Coastal Zone of North Evoikos Gulf (Greece) based on the use of Luminescence Dating Techniques

Maria Kazantzaki, Yannis Bassiakos, Theodora Rondoyanni, Evangelos Tsakalos, John Christodoulakis

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Change in Production and Distribution Pattern of Olivine-Tempered Ceramics Using OSL Dating

Sachiko Sakai

199.

Unraveling the Palaeoenvironmental Framework of Southeast Cyprus over the Late Quaternary - Luminescence Geochronology and Quartz Grains-Shape Examination

Evangelos Tsakalos, Yannis Bassiakos, Maria Kazantzaki, John Christodoulakis

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Epifanio Garay Between the Truth and the Oral Tradition: A Spectroscopic Micro-Raman Study

Diego Badillo, Wolfram Baumann

201.

Rapid Identification of a Blood Encrustation on an African Ritual Mask by DART-MS

Daniel Fraser, Cathy Selvius DeRoo, Robert Cody, Sylvia Torres, Ruth Ann Armitage

202.

The use of enzyme-linked immunosorbant assay and mass spectrometry for the characterization of binding media in Egyptian Romano portraits

Takashi Nakazawa, Yoko Taniguchi, Kazuki Kawahara, Shunsuke Fukakusa, Joy Mazurek, Marie Svoboda, Jeffrey Maish

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Analysis of an Egyptian Sarcophagus Fragment

Colleen O'Shea, Aaron Shugar, Lucy Skinner

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Mayans Did Not Just Drink Chocolate?

Shawn Owens, Marshall Ligare, Mattanjah S. de Vries, Stuart Tyson Smith, Anabel Ford

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Quantitative Elemental Analysis of Historical Soil through XRF, AAS, ICP-OES and EDX

Capri Price, Natasja Swartz, Doug Wilson, Tami L. Clare

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Application of VPSEM-μRS for SERS analysis of archaeological textiles

Diana C. Rambaldi, Sergey V. Prikhodko, Vanessa Muros, Elizabeth Burr, and Ioanna Kakoulli

207.

Getting to the Root of It: Analysis of Human Skeletal Remains from the New Haven Green

Yukiko Tonoike, Nicholas F. Bellantoni, Gary P. Aronsen, Gerald J. Conlogue, John Krigbaum, Lars Fehren-Schmitz, Natalie A. Pellatier, Robert Lombardo, Kylie Williamson, Judith A. Schiff, Frank Hole

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The Characterization of the Lamp Oil and Burning Incense from a Tang Dynasty Tomb in China

Shuya Wei, Qinglin Ma, Shuhong Lou

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BIOARCHAEOLOGY**

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DART-MS for Identification of Dye Colorants in Paracas Textiles

Ruth Ann Armitage, Kathryn Jakes, Calvin Day

210.

Diet and origin of enslaved Africans in Brazil: A multi-isotopic study of individuals buried in the Pretos Novos Cemetery in Rio de Janeiro and in the Catedral da Se in Salvador

Murilo Q. R. Bastos, Roberto V. Santos, Robert H. Tykot

211.

Non destructive identification and diagnosis of natural organic substances in cultural heritage: insight from Raman and infrared signatures

Ludovic Bellot-Gurlet, Céline Daher, Céline Paris, Martine Regert

212.

Hybridization of Agriculture In Neolithic Asia Minor: Reconstructing Human Diet and Disentangling Environmental Signals

Chelsea Budd, Rick Schulting, Necmi Karul, Songül Alpaslan-Roodenberg, Ron Pinhasi, Malcolm Lillie

213.

The use of strontium isotope data from human dental enamel as prima facie evidence for evaluating human provenience and mobility.

James H. Burton

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Thermal degradation chemistry of archaeological pine pitch: alone and mixed with beeswax

Maria Perla Colombini, Celia Duce, Andreas Kurzweil, Sibilla Orsini, Erika Ribechini, Alessio Spepi, Maria Rosaria Tinè

215.

Biochemical Indicators of Diet in a Late Muisca Settlement in the Northern Andes: Stable Isotopes and Trace Elements

M. E. Delgado Burbano, C. H. Langebaek, L. Aristizabal, R. H. Tykot, L. Johnson

216.

Pottery Function in Middle Neolithic Central-Western Mediterranean: an Integrated Use-wear and Biomolecular Approach to the Study of Vessels from the Bau Angius Site (Sardinia, Italy)

Laura Fanti, Carlo Lugliè, Martine Regert

217.

Chemical Analysis of Human Remains Recovered from Central Himalayan Range of Uttarakhand, India: Inferences for Preservatory Status and Dietary Reconstruction

Yogambar Singh Farswan, Jaibir Singh Pharswan

218.

Evaluation and Identification of Fatty Acids Contained in Archaeological Ceramics of Sutamarchan, Colombia, for 1000-1200 A.C and 1200-1600 A.C. Periods

Rafael R. Galindo, Brian Castro, Cesar Sierra, Helen H. Henderson

219.

Migration or not? Diet evidence of stable isotope analysis of human and animal from the Qinglongquan site, China

Yi Guo, Yilu Fan, Yaowu Hu, Junying Zhu, Changsui Wang, Benjamin Fuller, Michael P. Richards

220.

The Holy Wells of Scotland: a geo-hydro-archaeological approach to their study

Alan J Hall , Alex Alexander, Alan Stroud, Effie Photos-Jones

221.

How to fit vegetation in a box? Building a palaeobotanical and chemical database for the project “Exsudarch”

Auréade Henry, Claire Delhon, Arnauld Jouvenez, Antoine Pasqualini, Maxime Rageot, Martine Regert

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Anthraquinone Dye Colorants in Red Fibers from the Seip Mound, Ohio

Kathryn Jakes, Ruth Ann Armitage, Calvin Day

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Paleodiet and Society in Medieval Rural Communities from Basque Country (Spain)

Carmine Lubritto, Maite Iris García-Collado, Carmina Sirignano, Paola Ricci, Simona Altieri, Juan Antonio Quirós Castillo

224.

Climate driven dietary and agricultural change in the late Eneolithic/early Bronze Age Ukrainian Steppe recorded in organic residues in ceramic vessels

Simona Mileto, Richard P. Evershed, Elke Kaiser, Yuri Rassamakin, Wolfram Schier

225.

Was the Climate Too Harsh for the Late Neolithic Farmers of Finland? Tracing Foraging-Farming through Organic Residues in Pottery

Mirva Pääkkönen, Richard Evershed, Henrik Asplund

226.

Diagnosis of the Conservation State of a Granitic Outcrop with Rock Art.

S. Pozo, L. García, F. Carrera, T. Rivas

227.

Characterizing organic micro-residues by non- or micro-destructive method: new trends in mass spectrometry (DART TOF) combined with organic and inorganic analysis

M. Rageot, X. Fernandez, J-J. Filippi, L. Bellot-Gurlet, A.S. Le Hô, K. Pêche-Quilichini, M. Regert

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The POMEDOR Project: People, Pottery and Food in the medieval Eastern Mediterranean

S.Y. Waksman, A. Pecci, R.S. Gabrieli, E.J. Stern, J. Vroom and the POMEDOR collaboration

229.

The Study of Hyaena Coprolites from a Paleolithic Site of Central China

Wenjuan Wang, Guoding Song, Zhanyang Li, YanWu

230.

A Stable Isotopic Analysis of Dietary Patterns in Individuals Interred in the Late Neolithic/Copper Age Burials of Anta da Rego da Murta I and II (Alvaiázere, Portugal): Preliminary Results

Anna J. Waterman, Robert H. Tykot, Alexandra Figueiredo

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Identity, Mobility, and Childhood Origins of African Abductees at the End of the Transatlantic Slave Trade: a Strontium Isotopic Perspective

J. Watson, R.A. Bentley, K.A. Robson Brown, G.M. Nowell, A. Pearson, A.W.G. Pike

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Reconstructing Diet in Neolithic Greece using Stable Isotopes from Lipid Residues in Pottery

Helen Whelton, Mélanie Roffet-Salque, Kostas Kotsakis, Dushka Urem-Kotsou, Richard P. Evershed

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The relationship between archaeological site distribution and shoreline changes of Taiwan

Hsiao-chin Yang, Wen-shan Chen

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MRI and NMR-MOUSE study of reindeer skin tanning processes

Lizheng Zhu, Andy Illott, Torunn Klokernes, Cindie Kehlet, Eleonora Delfederico, Alexej Jerschow

REMOTE SENSING AND GEOPHYSICAL PROSPECTION AND FIELD ARCHAEOLOGY

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Subsurface Survey and Spatial Analysis on Chalcolithic Settlements From Eastern Romania

Andrei Asandulesei, Ionuț Cristi Nicu, Radu Balaur, Stefan Caliniuc, Vasile Cotiuga, Cristian-Constantin Stoleriu, Oana

Mihaela Stoleriu

236.

Geophysical studies of ancient tumulus in Azapa Valley, Arica, Chile

Luis Barba, Ivan Muñoz, Agustín Ortiz, Jorge Blancas

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Geophysical studies for the location of a mammoth remains in Mexico City

Luis Barba, Agustín Ortiz, Jorge Blancas, Joaquín Arroyo

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Preliminary conservation issues study of unearthed marble ruins in the Plutonium of Hierapolis (Denizli, Turkey)

F. D'Andria, S. Bracci, P. Caggia, E. Cantisani, T. Ismaelli, C. Riminesi, B. Sacchi, G. Scardozzi, S. Vettori

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Wireless Environmental Monitoring Devices for Historical Collections and Cultural Heritage Sites

Alexandra Jeberien, Susanne Litty,

240.

Photogrammetry and Visualization of the Viminacium

Miomir Korać, Snežana Golubović, Željko Jovanović

241.

Roman Legionary fort Viminacium – Multidisciplinary Research

Miomir Korać, Nemanja Mrđić

242.

Contribution of new geophysical measurement of previously excavated Neolithic roundel area near Bylany

Roman Křivánek

243.

Mapping of Indus-Saraswati Civilization (Using Geographical Information System)

Kulbhushan Mishra, Sudesh Nangia

244.

Elucidation of the degradation mechanisms in archaeological birch bark

Sibilla Orsini, Erika Ribechini, Francesca Modugno, Johanna Klügh, Maria Perla Colombini

245.

Application of REMPI Laser Mass Spectrometry to Cultural Heritage

Shawn Owens, Jacob Berenbeim, Mattanjah S de Vries, Stuart Tyson-Smith, Anabel Ford

246.

The examination of dynamics of oak wood degradation process in the wet peat and lake water conditions

Jeanette Lucejko, Magdalena Zborowska, Leszek Babiński, Bogusława Waliszewska, Francesca Modugno, Diego Tamburini, Maria Perla Colombini

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247.

The Red and The Gray: Ochre Pigments and Iron Ores from Twin Rivers Kopje, Zambia

Andrew M. Zipkin, Alison S. Brooks, John M. Hanchar, Kathy Shick, Nicholas P. Toth

248.

Petrological- chemical investigations for characterization of marble stones discovered in south Konar-Sandal (Jiroft, Iran)

Mohammad Amin Emami, Parvin Soleimani

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Study on the Smelting and Casting Technology of Copper and Copper Alloy: Wares from Central Plains in the Early Bronze Age of China

Yu Liu, Jianli Chen, Hong Xu, Nu He, Chunqing Zhao

SESSION III

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The Application of Laser Ablation ICP-MS and HH-XRF Techniques for Chinese Porcelain Dating and Provenance Research

Rita Giannini, Andrew Shortland

251.

Clays, Kilns and Ceramic Productions in Northern Apulia

E. Gliozzo, M. Turchiano, I. Memmi

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Digital Radiography of Macro-Scale Variation in Archaeological Ceramics: The Assemblage-Based Analysis of Ancient Eurasian Potting Techniques

Alan F. Greene, Charles W. Hartley, Paula N. Doumani, Michael R. Chinander

253.

Waste Not, Want Not: A Technical Approach to Identifying Grog in the Pre-Columbian Caribbean

Amanda J. Guzman, Corinne L. Hofman and Dennis Braekmans

254.

Assessing heating efficiency of archaeological cooking ware – the potential of 3D computer simulations

Anno Hein, Noémi S. Müller, Vassilis Kilikoglou

255.

Non-invasive Analysis of Chinese Blue-and-white Porcelain from Indonesia and the Philippines

Ellen Hsieh, Christian Fischer

256.

Glass beads from the Middle Danube basin: chemical composition and production

Rezida Khramchenkova, Olga Roumiantseva

257.

The Making of the Glass Tesserae of Hellenistic Mosaics in Delos, Greece: an In Situ Study Using pXRF, Colorimetry and Microscopy

Francesca Licenziati, Thomas Calligaro

258.

Prehistoric Ceramics from the Chengdu Plain: Scientific Analysis and Cultural Significance

Kuei-chen Lin, Christian Fischer

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Texture Recognition in Ceramic Samples Through The Implementation Of Gabor Filters And Artificial Intelligence Techniques

Pedro A. López-García, Noemí Román-Carrera, Manuel Ornelas-Rodríguez, R. Santiago-Montero, J.H. Puga-Soberanes, J.M. Carpio-Valadez, Denisse Argote-Espino

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Identification and Restoration of Late Roman Amphora, 4th – 6th Centuries AD from El-Bahnasa Site, Egypt

Fatma S. Madkour

261.

Analytical Study of Archaeological Ceramic and Glass from Different Periods

Excavated at Egypt

Fatma S. Madkour, Rezida Khramchenkova

262.

A mosaic of colours. Comparing production technologies of Roman and Late-Roman glass tesserae from various sites of Northern-Eastern Italy

S. Maltoni, A. Silvestri, G. Molin, M.T. Guaitoli, A.N. Rigoni, M. Salvadori

263.

Glass-working or glassmaking? New evidence from the site of “Fondi ex Cossar” in Aquileia (Italy)

S. Maltoni, A. Marcante, A. Silvestri, G. Molin, F. Gallo, M. Ganio, P. Degryse

264.

Slipped and Unslipped Common Wares of Hellenistic Tradition Produced at Kampyr Tepe in Ancient Bactria (Uzbekistan)

Verónica Martínez-Ferreras, Anno Hein, Josep M. Gurt-Esparraguera, Edvard V. Rtveladze, Shakir Pidaev, Vassilis Kilikoglou

265.

Late Bronze Age Borosilicate Glass Layers: Borax as Adhesive for Gold Covers on Mycenaean Vitreous Relief Fragments

Doris Möncke, Ferdinand Drünert, Eleni Palamara, Maria Kaparou, Nikos Zacharias, Dimitri Palles, Efstratios I. Kamitsos

266.

Prehistoric Pottery from SE Albania: A Compositional and Mineralogical Study

A. Oikonomou, C. Papachristodoulou, K. Stamoulis, P. Lera, S. Oikonomidis, A. Papayiannis, A. Tsonos, K. Ioannides

267.

The New AGLAE project: improvements and applications to Cultural Heritage artefacts

C. Pacheco, Q. Lemasson, B. Moignard, L. Pichon, Ph. Walter

268.

Studying a Luxurious Roman Vessel Glass Collection from Patras, Greece An Interdisciplinary Characterisation, Use and Provenance Study Using p-XRF, SEM/EDS, RAMAN and IR

E. Palamara, N. Zacharias, L. Papakosta, D. Palles, E.I. Kamitsos

269.

Local production and long-distance trade: Chemical analysis of Medieval glass beads from Imperial Mali

Lylliam I. Posadas

270.

INAA, PGAA, PIXE and DRX Analyses of Portuguese Glazed tiles. A contribution for production technology

M. I. Prudêncio, M. I. Dias, Zsolt Kasztovszky, Imre Kovács, Zoltán Szőkefalvi-Nagy

271.

Is Non-destructive Provenancing of Pottery Possible With Just a Few Discriminative Trace Elements?

D. Rauch, P. Rauch, D. Wilke

272.

Pottery Provenance in the Eastern Mediterranean-Combining Isotope Ratios with Neutron Activation Analysis

V. Renson, K. Slane, B. Kidd, M. Rautman, J. Guthrie, M. Glascock

273.

New Technological and Provenance Studies of Pueblo I Glaze Paints from the American Southwest

Brunella Santarelli, David Killick, Sheila Goff

274.

Diversity at the Eve of Encounters: Reconstructing the Technology and Craft Organisation of the Meillacoid Ceramics in northern Dominican Republic during the Late Ceramic Age (AD 600-1500)

Carmen Ting, Patrick Degryse, Jorge Ulloa Hung, Corinne L. Hofman

275.

Local Production vs. Importation of Ceramics in Late Bronze Age Sicily: Non-Destructive Elemental Analysis Using pXRF

Robert H. Tykot, Andrea Vianello, Erin Mckendry

276.

Studying Ceramic Production and Trade in the Gamo Caste System in Southwestern Ethiopia

Robert H. Tykot, John W. Arthur, Kathryn J.W. Arthur, Matthew Curtis, Sean Stretton

277.

Glass of the Volga Bulgaria Towns

Svetlana Valiulina

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Mössbauer Studies of Molded Prikamsky-Priuralsk Ceramics

Svetlana Valiulina, Elena Voronina, Rafil Manapov, Andrew Pyataev
279.

Chemical Composition of the Early Hungarian Rings from Bolshie Tigany Burial
Svetlana Valiulina, Elena Voronina, Rafil Manapov, Andrey Pyataev
280.

Clay Chemistry and Mineralogy in Florida and Georgia: Implications for Pottery Provenance

Neill J. Wallis, Zackary Gilmore, Ann S. Cordell, Keith H. Ashley, Thomas J. Pluckhahn, Michael D. Glascock
281.

The rectification of name of Proto-celadon –Discussion on the origin of celadon also
Changsui Wang, Wenjing Li, Yue Chen
282.

Preliminary Scientific Analysis of Iron Age Glass Beads from Chiuhsianglan, Taiwan
Kuan-Wen Wang, Caroline Jackson, Yoshiyuki Iizuka, Kun-hsiu Lee
283.

The Composition and Manufacture Analysis of the Glass Beads from Balikun Site Xinjiang China
Rui Wen, Zhiqiang Zhao, Jianxin Wang
284.

Etruscan Trade Networks: Ceramic Sourcing without Sampling using pXRF Spectrometry

Patrick Woodruff, Robert H. Tykot
285.

Analytical study of Achaemenid Glazed Bricks of Persepolis by multiple instrumental analysis methods

Soodabeh Yousefnejad, Reza Vahidzadeh, Mohammad Hasan Talebian
286.

Investigation of early Chinese Faience

Hu Yuan, Katherine Eremin, Richard Newman, Andrew Shortland

METALS AND METALLURGICAL CERAMICS

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The role of brass, and its use as surface plating of copper alloys
Arne Jouttijärvi

288.

Biringuccio-style casting, hessian crucibles and alchemy - Casting of copper alloys and traces of alchemy in medieval and renaissance Denmark

Arne Jouttijärvi

289.

Counting hammerscale - The systematic sampling of workshop remains, developments in methods and results

Arne Jouttijärvi

290.

Iron Age Metallurgy of Jerusalem

Brett Kaufman

291.

Han Dynasty metal production in Southeastern China: copper smelting and bloomery iron

David Larreina Garcia, Marcos Martín-Torres, Yangxian Li
292.

An Scientific Study of Copper Smelting Slag from Yujialing Site, Wenxi County, Shanxi Province in Central China

Jianxi Li, YanxiangLi, XiangmingDai

293.

Comparative study of furnace material used for cast iron smelting and melting in ancient China

Haifeng Liu, Wei Qian, Jianli Chen

294.

Revisiting Free Silica Slag

Siran Liu, David Larreina Garcia,

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Chavin Culture Metal Vessel: Determination of Elemental Composition and Thickness of Multilayer by Portable Energy Dispersive X-Ray Fluorescence (pXRF)

Fabio Lopes, Carlos R. Appoloni, Roberto Cesareo, Marcia Rizzutto

296.

Chemistry and Mineralogy of Slags from the Three-Stage Iron and Steel Production Process from the Southern Highlands of Tanzania

Edwinus C. Lyaya, Thilo Rehren, Bertram B. Mapunda

297.

Preliminary Investigation of the Sri Lankan Copper-alloy Statues

K. A. Anusha Kasthuri

298.

Metals and Alloys from the San Pedro de Atacama Region, Northern Chile: A Multi-Approach Perspective

Blanca Maldonado, Carlos Morales-Merino, Hans-Joachim Mucha, Hans-Georg Bartel, Thilo Rehren

299.

Perspectives for Isotopic Analysis of Copper Alloys: the case of the Late Bronze Age city of Nuzi

Elisa Maupas, Sarah Dillis, Patrick Degryse, Philippe Muchez, Katherine Eremin, Frank Vanhaecke

300.

Advance Results of Archaeometry Investigations about a Treasure from Bodrogolaszi, Hungary

Zsolt Dezső Nagy, Krisztián Fintor, Maria Tóth, László Révész

301.

Ready, Aim, Fire! The applicability of hand held portable XRF to the characterization of heterogeneous archaeological metals

Matthew Nicholas, Panagiota Manti

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Metal Rivets in Norse Antler Comb Manufacture at Bornais, South Uist, Western Isles of Scotland

Eric Nordgren, Ian Dennis, Niall Sharples

303.

Metallurgical Traditions Under Inka Rule: A Technological Study Of Metals And Technical Ceramics From The Aconcagua Valley In Central Chile.

María Teresa Plaza, Marcos Martín-Torres

304.

Methodological Issues in Understanding Ancient Crucible Metallurgy
Frederik Rademakers, Thilo Rehren

305.

Silver in Dnieper Hoards of the 6th-7th cc.: First Results of the Analytical Study of the Metal from the Sudzha-Zamoste Hoard

I. Saprykina, L. Pelgunova, V. Rodinkova, D. Stolyarova, A. Chugaev

306.

Archaeometallurgical Fieldwork and the Use of a Portable X-ray Fluorescence Spectrometer: Revisited

Rebecca Scott, Kim Eekelers, Lander Fredericks, Patrick Degryse

307.

pXRF 'In-the-Field' Fluctuations

Rebecca Scott, Kim Eekelers, Lander Fredericks, Dennis Braekmans, and Patrick Degryse

308.

The mystery of the lead disc: accidental survival or ritual deposition?

Rebecca Scott, Kim Eekelers, Patrick Degryse

309.

Copper Smelting Technologies at Nahal 'Amram, Southwest 'Araba Valley, Israel

S. Shilstein, S. Shalev, U. Avner

310.

Metal Objects in the Paolo Orsi Museum (Siracusa, Italy): Non-Destructive Compositional Analysis

Robert H. Tykot, Andrea Vianello, Anita Crispino

311.

Metal Production at the Late Bronze Age Site of Kalavassos-Ayios Dhimitrios, Cyprus

Lente Van Brempt, Vasiliki Kassianidou

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Iron on the Imperial Frontier: Evidence from Angkorian Period (9th-15th Century AD)

Iron Smelting Sites in Lao PDR and Thailand

Pira Venunan, Thomas Oliver Pryce, Marcos Martín-Torres

313.

A Preliminary Study on a Bronze Incense Burner Dated to the Eastern Jin Dynasty (317-420 A.D.) in Nanjing City, China

Xiaoqi Wang, Dahai Chen, Hong Wang, Xiaojuan Huang

314.

Research on gold and silver gilding technology on copper wares of Han Dynasty excavated from the Three Gorges

Xiaogang Yang, Houxi Zou, Xiaoyong Huang, Yongwei Wang, Pujun Jin

Please visit the site: <http://www.archaeometry2014.com/program/>

ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ –
JOB VACANCIES/FELLOWSHIPS

PHD STUDENTSHIPS

Dear colleagues,

Please find below details of three PhD studentships currently on offer. Studentship 1 should be of particular interest to zooarchaeologists. I would be grateful if you could pass the information on to potential candidates.

Cheers,
Umberto

"We are delighted to announce that **three** fully-funded PhD studentships on 'Faith in Food, Food in Faith: Interdisciplinary Perspectives on Dietary Practice' are available, starting in autumn 2014.

Each studentship will cover Home/EU tuition fees and provide a stipend paid at standard Research Council rates (£13,863 for 2014/15).

Closing date for applications: 5pm, Friday 13th June 2014.

The network

This network approaches the study of food and dietary practice in the past through molecular archaeology, nutritional epidemiology, zooarchaeology, history of medicine and artefactual archaeology. The studentships are aligned to different fields and time periods within the network but each explores the relationships between food, health, religion, social status, migration and identity. As part of a network the successful candidates will be expected to work together to enable inter-disciplinary engagement, for example, through a student-run conference. The network will create an invigorating environment for the production, exchange and dissemination of research on diet, drawing on strengths in both science and the arts & humanities.

The studentships focus on three regions of Europe where political, economic and technological change occurred at different times. In the medieval Iberian Peninsula and Sicily, Muslim rule across several centuries brought innovative animal husbandry techniques, irrigation technology, new technical vocabularies and new foods such as citrus fruits and sugar cane, with long-term nutritional impact. In 19th-21st century Sheffield, urbanization, industrialization and migration all affected diet, income, education and public health. In all these periods and places, certain food stuffs had a continuous history of use, leading to the creation of extensive beliefs and related health problems.

Each of the three successful applicants will be expected to participate fully in the activities of the network, including undergoing some training in the methodologies of the other disciplines. They will also have access to all the additional opportunities provided by the White Rose College of the Arts and Humanities, including Research Training Mobility funds, Researcher Employability projects, and Knowledge Exchange Projects. Further details about the doctoral training and opportunities offered by WRoCAH can be found at: www.arts-and-humanities.whiterose.ac.uk.

Queries about the network should be directed to the network co-ordinator, Dr Iona McCleery i.mccleery@leeds.ac.uk. Queries about individual projects should be directed to the project supervisors (listed below).

Studentship 1 (based at Sheffield): Animal Husbandry in Sicily during the Islamic-Christian Transition, 8th-12th Centuries.

Supervisors: Dr Umberto Albarella (Sheffield), u.albarella@sheffield.ac.uk; Professor Martin Carver (York), martin.carver@york.ac.uk.

This studentship focuses on zooarchaeological methods. The candidate will explore animal husbandry in medieval Sicily during periods of transition between Christian and Muslim rule (8th-12th centuries). This studentship links zooarchaeology in Sheffield and York with an international project studying economic and social transition in medieval Sicily, including new farming methods, which is led by York and Rome. Knowledge of Italian will be an advantage, but language training is available.

Studentship 2 (based at York): Food and Faith in Medieval Spain.

Supervisors: Dr Michelle Mundeel (York), michelle.mundeel@york.ac.uk; Dr Iona McCleery (Leeds), i.mccleery@leeds.ac.uk

This studentship focuses on molecular archaeological methods. The candidate will explore stable isotope evidence for diet in the Iberian Peninsula during transitional periods between Muslim and Christian rule (11th-13th centuries, 15th-16th centuries). The aim is to investigate whether transfers of power affected diet in a measurable way. The candidate will be encouraged to research the political, medical and social context of the chosen populations. Knowledge of Spanish will be an advantage, but language training is available.

Studentship 3 (based at Leeds): Food and Nutrient Intake in Low Income Families: A Comparative Study.

Supervisors: Professor Janet Cade (Leeds), j.e.cade@leeds.ac.uk; Professor Dawn Hadley (Sheffield), d.m.hadley@sheffield.ac.uk.

This studentship focuses on nutritional epidemiological methods. The project will take a socio-statistical approach to food insecurity in modern and historical working-class populations (conducting interviews, making use of population surveys and

historical/archaeological research). The emphasis will be on at-risk low income families, especially children. The project relates to existing projects at Leeds and Sheffield on the social determinants of modern nutritional health and the archaeology of working-class communities in the 19th-20th century.

The application process

Applicants should have an undergraduate degree (normally 2:1 or above, or equivalent) and be studying for, or have completed, a Masters degree (or have experience deemed to be equivalent to a Masters degree) in a subject relevant to the main discipline highlighted in each studentship. A willingness to undergo sufficient training when needed in the other disciplines is essential. Applicants whose first language is not English must meet the English Language requirements of the relevant university and department.

Studentship 1 (Sheffield): complete the PhD application form available at <http://www.sheffield.ac.uk/postgraduate/research/apply/applying>

Studentship 2 (York): complete the PhD application form available at <http://www.york.ac.uk/study/postgraduate/apply/#tab-2>

Studentship 3 (Leeds): complete the PhD application form available at https://studentservices.leeds.ac.uk/pls/banprod/bwskalog_uol.P DispLoginNon as well as the studentship application form at http://www.leeds.ac.uk/rsa/postgraduate_scholarships/PGR-UKEUAppForm14 and return this to pg_scholarships@leeds.ac.uk.

IMPORTANT: In addition to submitting the form to the individual institutions, you must send a copy of your application to the network co-ordinator, i.mccleery@leeds.ac.uk, by 5pm on Friday 13 June 2014.

On the application forms for each institution, you should state that you are applying for one of the studentships in the WRoCAH-funded network 'Faith in Food, Food in Faith'. You should also indicate how you will develop your project within the areas outlined in the descriptions of the studentships (above) and detail how your previous academic experience has prepared you to undertake that project. Where relevant, indicate training needs (e.g. languages)."

Umberto Albarella
Department of Archaeology
University of Sheffield
Northgate House
West Street
Sheffield S1 4ET
United Kingdom
Telephone: (+) 44 (0) 114 22 22 943
Fax: (+) 44 (0) 114 22 25 109
<http://www.sheffield.ac.uk/archaeology/people/albarella>
For MSc in Osteoarchaeology see:

<http://www.shef.ac.uk/archaeology/postgraduate/masters/courses-available/osteoarcaeology>

For Zooarchaeology short course see:

<http://www.shef.ac.uk/archaeology/research/zooarchaeology-lab/short-course>

For Archaeologists for Global Justice (AGJ) see:

<http://agj.group.shef.ac.uk/>

RESEARCH ASSISTANT FOR BEAZLEY **ARCHIVE POTTERY DATABASE**

Faculty of Classics (Classical Art Research Centre), Ioannou Centre for Classical and Byzantine Studies, Oxford

Grade 6, £26,527-31,644 per annum (pro rata)

The Classical Art Research Centre is seeking a highly motivated and talented pre-doctoral or post-doctoral researcher to work on the Beazley Archive Pottery Database (BAPD) -- the foremost online resource for the study of ancient Athenian painted pottery. The post is fixed-term (12 months), but there is some possibility of extension, subject to funding.

The post-holder will have a central role in expanding and enhancing the BAPD as well as carrying out work on related projects. The role comprises three main elements, the balance of which may change according to circumstances. (1) Surveying new publications in order to update the image-bibliographies on BAPD records and create new records for Attic pottery; (2) scanning and processing fascicules of the *Corpus Vasorum Antiquorum* for CVA Online, integrating data and images into the BAPD; (3) researching Sir John Beazley's digitized notebooks and integrating some of the material into the BAPD as part of the Beazley Notebooks Project.

The successful candidate will have a first degree in a relevant subject, together with experience of research and academic bibliography specifically relevant to ancient Athenian pottery and a high level of self-motivation so as to work efficiently and independently. S/he will have strong IT skills and very high standards of accuracy.

Applications for this vacancy are to be made online. Please visit www.recruit.ox.ac.uk and enter vacancy ID **113328** for the further particulars and to apply.

The closing date for applications is Monday 16 June. Interviews will be held in the week commencing 30 June.

Vacancy ID: 113328

Closing date: Monday 16 June

Contact person: Dr Peter Stewart

Contact phone: 01865 278082

Contact email: peter.stewart@classics.ox.ac.uk

Dr Peter Stewart

Director, Classical Art Research Centre

Associate Professor of Classical Art and Archaeology

University of Oxford/ Wolfson College

Ioannou Centre for Classical and Byzantine Studies

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Tel: +44 (0)1865 278082

Fax: +44 (0)1865 610237

www.carc.ox.ac.uk www.beazley.ox.ac.uk



STAFF SCIENTIST POSITION IN
ACCELERATOR MASS SPECTROMETRY,
LEIBNIZ-LABORATORY FOR
RADIOMETRIC DATING AND ISOTOPE
RESEARCH, CHRISTIAN-ALBRECHTS-
UNIVERSITÄT, KIEL, GERMANY

The Leibniz-Laboratory for Radiometric Dating and Isotope Research at the Christian-Albrechts-Universität, Kiel, Germany invites applications for a permanent position in

Physics and/or Isotope Chemistry in the Accelerator Mass Spectrometry Unit.

The Leibniz Laboratory uses a 3 MV HVE Tandatron accelerator system exclusively for radiocarbon research in fields such as climate and marine research, in geology and cultural sciences, as well as in history and archaeology. Internal research projects are performed in these fields while most of the annual budget is funded by measurement income from external customers.

The successful candidate is expected to:

- direct and contribute to the routine operation and maintenance of the existing AMS system for radiocarbon measurements on biological, geological and archaeological samples
- assure the quality control of measurements and instrument performance at highest level possible
- Initiate and guide the purchase and installation of a second small state-of-the-art AMS system for very small sample volumes.

Essential qualifications are:

- a PhD, preferably in Physics or Chemistry, related to the application of accelerator systems and/or isotope chemistry in nuclear, environmental or health studies
- extensive experience in AMS ¹⁴C analyses and data quality assessment, as well as in independent operation and maintenance of AMS-systems
- practical knowledge in a relevant field of experimental physics, e.g., vacuum or detector techniques, ion optics and sources, electronics.

Experience in programming of complex data bases, orientation towards customer-related services, and strong interest in own research projects will be advantageous.

The successful applicant will be part of an international team, thus fluency in English and German language will be preferred. For foreign applicants, the willingness to learn German within 2 years is essential.

Preparedness for flexible working schedules including at weekends is also a requirement.

The starting salary will be commensurate with experience up to TV-L 14.
Advancement to become the head of the AMS unit is possible, depending on existing experience or after a probation period of two years.

The Christian-Albrechts University is an equal opportunity employer.
Therefore women, disabled persons and those with foreign citizenship are encouraged to apply.

To apply, please send a résumé, including a detailed description of work experience, educational background, a one page statement of research interests and copies of your 3 most important publications, as well as names and addresses of 3 referees, by June 15th, 2014

to Prof. Ralph Schneider, Leibniz-Labor, CAU Kiel, Max-Eyth-Strasse 11, 24118 Kiel, Germany

For further information contact:
Ralph Schneider
Tel.: +49 (431) 880 7390,
email: rschneider@leibniz.uni-kiel.de.

FELLOWSHIPS: RESEARCH TRAINING **GROUP 1876 (MAINZ)**

The interdisciplinary Research Training Group (Graduate School) funded by the German Research Foundation (Deutsche Forschungsgemeinschaft) at Johannes Gutenberg University Mainz on “Early Concepts of Man and Nature: Universal, Local, Borrowed” invites applications for 2 Promotionsstellen (PhD positions), starting on October 1st, 2014.

The disciplines cooperating in this programme are Egyptology, Ancient Near Eastern Studies, Archaeology of the Ancient Near East, Graeco-Roman Archaeology, Classical Philology (Greek and Latin), Byzantine Studies, Middle High German and Medical History. For further information see <http://www.grk-konzepte-mensch-natur.uni-mainz.de>.

Please find below the job advertisement for the above mentioned Promotionsstellen (PhD positions). The closing date for applications is June 30th, 2014.

Call for Applications

The German Research Foundation (Deutsche Forschungsgemeinschaft) at Johannes Gutenberg University Mainz invites applications for the interdisciplinary Research Training Group 1876 “Early Concepts of Man and Nature: Universal, Local, Borrowed”. We offer 2 positions (wissenschaftliche/r Mitarbeiter/in, 13 TV-L 65%) tenable for a maximum of 36 months, starting on October 1st, 2014.

The Research Training Group, funded by Deutsche Forschungsgemeinschaft (The German Research Foundation), is directed by staff from the fields of Egyptology, Ancient Near Eastern Studies, Near Eastern Archaeology, Classical Philology, Classical Archaeology, Middle High German, Byzantine Studies, and Medical History. Our research and training programme will focus on the development of concepts and ideas about man and nature in the ancient Near East, North-Eastern Africa, and Europe, making use of written evidence, material culture, and iconography, in the following four areas:

- 1) Cosmogony and Primary Elements;
- 2) Nature: Natural Phenomena, Forces, and Catastrophes;
- 3) Flora, Fauna, and Landscape;
- 4) Man’s Body in Sickness and in Health.

Topics for PhD theses must be chosen from one of these four areas and belong to one of academic the disciplines mentioned above.

In this application-round we are looking for individual dissertation projects for the following areas (1) Cosmogony and Primary Elements, (2) Nature: Natural Phenomena, Forces, and Catastrophes and (4) Man’s Body in Sickness and in Health. You are

welcome to submit your own proposal for a PhD thesis, or we will try and identify a suitable topic during the application process.

For detailed information regarding our programme for research and training and the staff involved with our graduate school, please refer to our homepage (www.grk-konzepte-mensch-natur.uni-mainz.de) before submitting a proposal.

Requirements:

Applicants must hold a diploma or master's degree (or equivalent) with excellent results in one of the philological or archaeological disciplines mentioned above and fulfil the necessary requirements for studying for a doctoral degree in either Fachbereich (Faculty) 05 or 07 of Johannes Gutenberg University Mainz (https://www.uni-mainz.de/studium/171_ENG_HTML.php).

We provide:

The Johannes Gutenberg University Mainz offers a structured dissertation programme within the Research Training Group 1876 as well as the possibility for an intensive professional and interdisciplinary exchange. In thematically related workshops and conferences the doctoral students will be given the opportunity to exchange expertise with other researchers. The individual dissertation projects will be supervised by two professors of different scientific disciplines.

Various international cooperation partners are available for participation in a mentoring programme. Further, cooperating institutes of the Research Training Group offer traineeships. Doctoral students have the possibility to stay at a research institute abroad for four weeks as well as to participate in (international) conferences. Beside the acquisition of key qualifications, e.g. time-management or academic writing courses, and further education programmes we offer all doctoral students a modern working place in an agreeable working environment.

Alumni of the Research Training Group have the possibility to apply for a six-month-startup-funding for another research project.

We expect:

Applicants will be able to demonstrate exceptional academic achievement and be willing to engage in interdisciplinary work.

Continuous participation in the study programme is compulsory. The presence of doctoral students at the Johannes Gutenberg University Mainz is mandatory and recommended for associate members.

Johannes Gutenberg University Mainz is keen to increase the number of women among its scholars and thus encourages women to apply. Disabled persons will be given preference if equally qualified.

More details regarding application and the selection of candidates can be found on the homepage of our graduate school. You may also contact a member of staff in your discipline if you have a specific question.

For organizational questions you may contact the coordination office.

Please submit your complete application in electronic form (pdf) only no later than 30th June, 2014 to the Research Training Group spokesperson, Univ.-Prof. Dr. Tanja Pommerening (grk1876@uni-mainz.de).

Your application (by e-mail only) will include (as pdf):

Application form (to be downloaded from our homepage), curriculum vitae, a complete transcript of records, starting with the last report obtained before entering university (Abitur or equivalent), research activities, résumé of your graduate thesis (3 pages), letter of motivation, optional: exposé for a PhD thesis in one of the areas of the Research Training Group mentioned above (4 pages), summarizing the idea, outlining research questions and state of the art, approach and methods to be used, work and time schedule, two letters of recommendation from members of academic staff allowing us to judge your abilities (to be sent before the closing date directly to the spokesperson).

ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS

LIGATUS SUMMER SCHOOL 2014, **LJUBLJANA**

<http://www.ligatus.org.uk/summerschool>

22 – 26 September: The History of European Bookbinding 1450-1830.

29 September – 3 October: Identifying and recording bookbinding structures of the Eastern Mediterranean.

6 – 10 October: Byzantine bookbinding: a practical workshop.

This year's Ligatus Summer School will take place in the beautiful city of Ljubljana in Slovenia, and will be hosted by the Archives of the Republic of Slovenia.

The price is £300 per week per participant, and this includes fees for teaching only. Travel, food and accommodation would need to be arranged individually by each student.

Summer school context:

The contribution that bindings can make to our understanding of the history and culture of the book is often neglected, but they can offer insights into the study of readership, the booktrade, and the provenance of books that are often not available elsewhere. In order to realise this potential, it is important to understand not only the history of the craft but also to learn how to record what is seen in a consistent and organised way. Librarians, cataloguers, conservators, book historians, book collectors and all scholars who work with early books, can benefit therefore from understanding the structure and materials of the bindings they encounter in order to be able to record and describe them. Such descriptions of bindings are not only valuable for the management of library collections, pursuing academic research and making informed decisions about conservation, but are also important for digitisation projects, as they can radically enrich the potential of image and text metadata. It is our belief that bindings should be seen as an integral part of the book, without which, our understanding of the history and use of books is often greatly circumscribed.

The main purpose of the summer school is to uncover the possibilities latent in the detailed study of bookbinding. While our courses concentrate in particular on the structure and materials of bookbindings, each of the courses offered in this summer school looks at bindings from different geographical areas and with a different approach. The first course looks at the history of bookbinding as it was carried out in Europe in the period of the hand press (1450-1830), with the opportunity to look at examples from different collections during the afternoons. The second course looks at the development of bookbinding in the eastern Mediterranean and gives instruction in a) the development manufacture of specific aspects of Byzantine and Post-Byzantine bindings and b) the development of methodologies and tools for recording bindings, working with examples from the collections in Ljubljana. We are also in a position this year, thanks to the generosity of our hosts, the Archives of the Republic of Slovenia, to offer as an extra third week from 6-10 October, a 5-day course, Byzantine bookbinding: a practical workshop, to be given by Dr George Boudalis.

The courses are taught in English, and the first one is open to 12 participants, the second and third to no more than 10 participants.

Although the courses can be attended individually, participants are encouraged to attend the first two courses in order to get a more complete understanding of the issues discussed, through the comparison of the wide range of bookbindings considered in each week. Since these are not beginner-level courses, the participants are expected to be familiar with bookbinding terminology and have a basic knowledge of the history of book production in the periods under discussion. For the second week the participants need to have a basic understanding of the use of databases. For the third week, experience in binding books is essential.

Description of courses:

Week 1, European Bookbinding 1450-1830

Tutor: Professor N. Pickwoad

This course will follow European bookbinding from the end of the Middle Ages to the beginning of the Industrial Revolution, using the bindings themselves to illustrate the aims and intentions of the binding trade. A large part of the course will be devoted to the identification of both broad and detailed distinctions within the larger groups of plain commercial bindings and the possibilities of identifying the work of different countries, cities, even workshops without reference to finishing tools. The identification and significance of the different materials used in bookbinding will be examined, as well as the classification of bookbindings by structural type, and how these types developed through the three centuries covered by the course. The development of binding decoration will be touched on, but will not form a major part of the discussion.

The course consists of ten 90-minute sessions with Powerpoint presentations (over 800 images will be shown). Actual examples of bindings will be shown in the afternoon sessions in a variety of historic collections in Ljubljana.

Week 2, Identifying and recording bookbinding structures of the eastern Mediterranean

Tutors: Dr. G. Boudalis and Dr. A. Velios This course is divided into two interconnected sessions.

Dr. Georgios Boudalis, will focus on the major structural and decorative features of the different bookbinding traditions which have developed in the eastern Mediterranean – including the Coptic, Syriac, Armenian, Georgian and Islamic - with special focus on the Byzantine and post-Byzantine bookbindings. The aim is to follow the evolution of these closely related bookbindings and establish their similarities and differences during lectures, slide-shows and demonstrations of real bookbindings from the collections of the University of Uppsala Library.

This part of the course will consist of six 90-minute presentations from Monday to Wednesday.

The other part of the course will be taught by Dr. Athanasios Velios and will deal with the methodologies and techniques that can be used to record bookbindings. After an introduction on the capacity and scope of each methodology and technique, this session will focus on a) the semantic web and the CIDOC conceptual reference model, b) standardised vocabularies for book descriptions (SKOS), c) the development of database

schemas for both the relational and the hierarchical model, d) the advantages of various implementation tools and e) photographic records and workflows for large collection surveys. A part of this session will be devoted to the actual development and use of a sample of a bookbinding glossary, a documentation system for recording binding structures and the actual recording of specific bindings. This session will consist of six 90-minute presentations from Monday to Wednesday and hands-on workshops on Thursday and Friday.

Week 3, Byzantine bookbinding: a practical workshop

Tutor: Dr. G. Boudalis

The aim of this five-day workshop is to produce a model book bound according to typical Byzantine techniques, starting from the sewing of the gatherings and ending with the fastenings and decoration of the cover. A general introduction to the features and evolution of Byzantine bookbinding will be provided and different variations of methods for sewing the bookblock, attaching the boards and sewing the endbands will be shown and explained.

If participants prefer to bring their own materials they should first consult the course tutor about this before doing so.

Accommodation

A number of accommodation options will be provided to the participants.

A detailed schedule of the courses can be sent upon request.

Applications, including a short CV can be submitted online (<http://www.ligatus.org.uk/summerschool/>). For information about registration please e-mail Ewelina Warner (e.warner@arts.ac.uk) and give the e-mail subject as: 'Ligatus Summer School'. A reading list will be sent in advance to those who will attend the courses.

Applications deadline

The deadline for applications is 1 July. The participants will be contacted by the end of July.

About the Archives of the Republic of Slovenia:

The main building of the Archives is the listed Gruber Palace, which was begun in 1773 by the Jesuit Gabriel Gruber; it survives as a precious art-historical monument. The main staircase and rooms are filled with paintings and stucco decoration, the private chapel has paintings by Kremser-Schmidt, and a fresco by Herrlein adorns the dome above the staircase. It is a fine example of the bourgeois Baroque style of the last quarter of the 18th century. The atmosphere is completed by paintings in the reading room that date back to the first half of the 19th century. The Archives as an institution dates back to 1859, when it was part of the Carniolan Historical Society Museum. When the museum was given its own building in 1887, the all the archives were kept in the Gruber Palace and through the many political changes that followed, its name changed many times as its size and significance grew, finally to become the Archives of the Republic of Slovenia.

To find out more about the history of the Archive, please visit:

<http://www.arhiv.gov.si/en/>

About the Book and Paper Conservation Centre:

The Book and Paper Conservation Centre was established in 1956 as part of the museum which was the predecessor of the National Museum of Modern History. Since 1980 the department has been part of the Archives of the Republic of Slovenia located in the premises of the Grubar palace. The work of the centre is divided into three periods: its beginnings at the Museum of the National Liberation PRS under the leadership of Ljudmila Krese, 1956 to 1974; the incorporation into the Archives of the Republic of Slovenia, under the leadership of Nada Čučnik Majcen 1975 to 1983; its time at the Archives of the Republic of Slovenia (subsequently the National Archives of Slovenia) from 1990, under the leadership of Jedert Vodopivec, who is our host for our Summer School.

The classes and workshops will therefore be hosted by the Book & Paper Conservation Centre, which is a part of the Archives of the Republic of Slovenia and based also in the Gruber Palace.

To find out more, please visit:

http://www.arhiv.gov.si/en/areas_of_work/restoration_and_conservation/

About Ljubljana:

With its 280,000 inhabitants Ljubljana is the political and cultural heart of the Slovenian nation. It is an important European commercial, business, exhibition and congressional centre, as well as the transport, science and education centre of Slovenia. It is located in the heart of the country between Alps and Karst and is full of parks and green spaces, beautiful street and squares. For centuries Ljubljana was a capital of the historical Carniola region on the crossroads of Slavic and Germanic cultures. Its historic city centre remains largely intact, with the oldest preserved architecture dating back to the Roman period, and although the outline of the old town dates from the Middle Ages, most of it was rebuilt after 16th century in the Baroque style. We are reliably informed that the weather in late September/early October is likely to be perfect - warm and sunny without being too hot.

For more information about Ljubljana, please visit:

<http://www.ljubljana.si/en/about-ljubljana/>

About Ligatus:

Ligatus is a research centre of the University of the Arts London with particular interest in the history of bookbinding, book conservation, archiving and the application of digital technology to the exploration and exploitation of these fields. Ligatus's main research projects currently include the conservation of the books in the library of St. Catherine's Monastery on Mount Sinai and the development of a thesaurus of bookbinding terms.

1ST ARCHAEOLOGICAL SUMMER COURSE **AT POLLENTIA (MALLORCA),** **21-25 JULY, 2014**

Dear colleagues,

We would like to announce the **1st Archaeological Summer Course at Pollentia (Mallorca)**.

The purpose of the course is to expose students to interdisciplinary research that involves archaeology and the natural sciences in the field. The students will experience interactive work that combines excavation and analysis of materials using an on-site laboratory. The course will emphasize the inter-connection between laboratory analyses and the archaeological context, and will include fieldwork, laboratory work, and lectures.

The Roman city of *Pollentia* was founded in 123 by *C. Caecilius Metellus* with the conquest of the Balearics for Roman. Archaeological investigations started in the 1920's have uncovered a theatre, several residential quarters, necropolis and the Forum where current excavations are being carried out. The archaeological excavations are actually run by the University of Barcelona and the University of La Laguna, under the auspice of the Consortium of the Roman city of *Pollentia*. The ancient ruins are attached to modern Alcúdia in the northern part of Mallorca. It is a medieval village surrounded with walls and a nice atmosphere with all services, bars and restaurants available. Beautiful beaches are at a walking distance and the village is an excellent place to explore other parts of the island.

The course will take place from the 21-25 of July 2014. There are 10 vacancies only, over 18 years old. Selection will be made on academic merits. The profile of the students will be in Archaeology, Classics, Anthropology students or any other person interested in experiencing the real work of Archaeology and Archaeological Sciences. The course includes an official certificate.

Fees: 800 € Archaeological Sciences Summer School;

Fees include Accommodation and meals

Air fares are NOT included

You can pre-register to the course at: <http://www.archeoscience.com/summerschool/>

The students of the Archaeological Sciences Summer School are also welcome to join the International Summer School on Roman Archaeology starting the 7th of July ending the 3rd of August.

Attached is the brochure with all the information

We would greatly appreciate if you can pass the information about our program on to your students.

Sincerely yours,

Miguel Angel Cau

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OPTO-CH WORKSHOPS 2014, IESL-FORTH, HERAKLION, CRETE, GREECE

- A. June 23- 27, 2014 POLITEIA Analytical
B. June 30- July 04, 2014 POLITEIA Cleaning

Join us for an exciting journey to Crete to become acquainted with the latest developments on non-invasive laser technologies and explore their field applications in Cultural Heritage conservation

WORKSHOP AIMS AND CONTENT

OPTO-CH 2014 POLITEIA thematic workshop series will introduce participants to applications of advanced laser technologies in Cultural Heritage (CH) science, diagnostics and conservation. Lectures from experts on modern laser diagnostic and analytical techniques and cleaning methodologies will be combined with practical demonstrations and laboratory hands-on sessions.

WORKSHOP TIME-LINE:

The two thematic workshops of OPTO-CH 2014 POLITEIA series are planned for the end of June- beginning of July 2014 as follows:

A. “POLITEIA Analytical”

June 23- June 27, 2014 à Advanced laser technologies for analysis, diagnostics and conservation of Cultural Heritage materials and monuments

B. “POLITEIA Cleaning”

June 30- July 04, 2014 à Laser technologies in Cultural Heritage conservation

Each workshop can be attended individually or participants may choose to combine them for an overall approach. Registration at each individual workshop is necessary.

WORKSHOP SERIES OUTLINE:

The lectures will introduce participants to the general concepts and principles of operation of each technique with emphasis on their analytical and diagnostic potential and applications. Selected examples and case studies will be thoroughly analysed to illustrate how optical technologies can be used in CH conservation.

TOPICS

- Materials analysis with Optical Spectroscopy (LIBS, Raman)
- Optical coherence metrology for structural diagnosis
- Imaging and mapping; multispectral, multiphoton and THz
- Laser cleaning.

SPECIAL LECTURES:

soon to be announced.

ADDITIONAL LECTURES:

- Surfaces; finishes, techniques and materials; their properties, chemistry, and changes (A deTagle)
- Pigments and materials throughout the Cretan cultural times (A deTagle)

- Geophysical - satellite remote sensing and archaeo-environment (A Sarris)
- e-tools for managing the use of analytical, diagnostic and conservation methodologies (M. Doerr)
- Detecting colour remains on historic stonework; an analytical challenge (M. Vacondiou)
- Russian icons; treasures to be discovered (Y. Boycheva)
- Magnetic Resonance techniques for the analysis of Cultural Heritage materials (A Spyros)
- Discussion with the participants

Participants are invited to present cases studied they are involved in and discuss challenges that might be addressed by optical diagnostic techniques.

HOW TO APPLY

Application deadline for both workshops: **May 27, 2014.**

Number of participants per each individual workshop: **12.**

WORKSHOP SERIES LANGUAGE:

English

This workshop is organised in the framework of the “**POLITEIA**” (**POLitismos-TEchnologIA, New Technologies in the Research, Study, Documentation and Access to the Information for Cultural Heritage Objects and Monuments**) research project, Action KRIPIS, project No MIS-448300 (2013SE01380035) that was funded by the General Secretariat for Research and Technology, Ministry of Education, Greece and the European Regional Development Fund (Sectoral Operational Programme : Competitiveness and Entrepreneurship, NSRF 2007-2013)/ European Commission.

Please visit the site: <http://www.iesl.forth.gr/research/course.aspx?id=4>

SUMMER SCHOOL OF ARCHAEOLOGY, 27 JULY–24 AUGUST 2014, ABRUZZO, ITALY

OBJECTIVES

The summer school of archaeology in Abruzzo is an academic program offered by University of Pisa in collaboration with Soprintendenza per i Beni Archeologici dell' Abruzzo.

The course will be 4 weeks and it will be articulated in three main parts to provide students with theoretical knowledge and methodological tools:

Lectures, Laboratory, Field-activity.

Lectures will focus on:

- .method and techniques of archaeology
- .geomorphological and landscape analysis of sites
- .Its applications on archaeological data
- .archeometry
- .prehistoric archaeology
- .roman archaeology
- .Experimental archaeology

Laboratory activities will allow students to develop their competence on:

- .Procedures for cleaning, consolidation, restoration, labeling, inventory and cataloguing of materials
- .Graphic, photographic and written documentation
- .the digital processing of the acquired data

THE PROGRAMME

The aim of this programme is to increase awareness and competencies about archaeological and methodological issues.

The school will provide all participants a deep knowledge of European archaeology with particular focus on Italian archaeology.

The Summer School lasts 4 weeks.

From 27 July to 24 August

Fees: 2150 Euro.

Cost includes the school activity, accommodation and meals.

International travel and all other than not specified are not included.

S.Stefano (5800-5400b.C.) is a neolithic site, situated in the north-west corner of Fucino basin. Materials and radiocarbon dating allow to collocate the site in the Impressed Ware culture of Adriatic early Neolithic.

Alba Fucens was an ancient Italic town at the foot of Monte Velino. The site was occupied by a Roman colony (304BC) owing to its strategic importance.

Field-activities will be carried out in two different sites

FEES AND INFO

Please fill the application form for the registration at:

<http://www.cfs.unipi.it/summerschool-abruzzo/>.

Deadline 20 Jun2014

ACCOMMODATION

Students will be housed in a guest-house.

CREDITS:

.Certificate of participation

.Overall load of 280 hours of activities corresponding to 10 ECTS

CONTACTS:

<http://www.cfs.unipi.it/summerschool-abruzzo/>

Mail: summerschool.abruzzo@arch.unipi.it

[ENCoRE] e-Newsletter 14-2

Dear Members and Partners

e-Newsletter 14-2 is now available from the website. <http://www.encore-edu.org/e-newsletters.htm>

Direct link to the e-Newsletter 14-2: <http://www.encore-edu.org/ENCoRE-documents/e-newsletter/EncoreE-newsletter2-2014.pdf>

Contents

- ENCoRE Conference “Teaching Conservation-Restoration” 26 March 2014, Liège
- 10th General Assembly of ENCoRE – Report and Perspectives
- On Practice in Conservation-Restoration Education
- Statutes of the Association called European Network for Conservation/Restoration Education - ENCoRE

Regards

Karen Borchers

ENCoRE

Karen Borchers

ENCoRE Secretariat, Conservator-restorer, Students Councillor

The Royal Danish Academy of Fine Arts,
Schools of Architecture, Design and Conservation
School of Conservation

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DK-1263 Copenhagen K

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INTERNET SITES

THE NILE DELTA AS A CENTRE OF CULTURAL INTERACTIONS WITH UPPER EGYPT AND THE SOUTHERN LEVANT IN 4TH MILLENNIUM BC

All books published under the project “The Nile Delta as a centre of cultural interactions with Upper Egypt and the Southern Levant in 4th millennium BC” are now available as PDF files for free download on Poznan Archaeological Museum website:

<http://www.muzarp.poznan.pl/en/new-books-in-studies-in-african-archaeology-series/>

<http://www.muzarp.poznan.pl/en/activities/publications/museum-publications/tell-el-farkha-i-excavations-1998-2011%E2%80%B3/>

THE STILIDA NAXOS ARCHAEOLOGICAL PROJECT

Dear all

Hopefully of interest to some of you, our new and developing website for the Stélida Naxos Archaeological Project, a geo-archaeological survey of an early prehistoric chert source in the Cyclades: <http://stelida.mcmaster.ca/>

very best

Tristan / Stringy

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ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

MINOAN REALITIES. APPROACHES TO IMAGES, ARCHITECTURE, AND SOCIETY IN THE AEGEAN BRONZE AGE. AEGIS 5

Dear all,

we are pleased to announce the publication of a book on Minoan Archaeology:

D. Panagiotopoulos and U. Güntel-Maschek 2012, eds. *Minoan Realities. Approaches to Images, Architecture, and Society in the Aegean Bronze Age. AEGIS 5*. Louvain-la-Neuve: Presses universitaires de Louvain. ISBN: 978-2-87558-100-6; price: € 32,00, excl. shipping charges.

This book assembles the papers presented at the conference “Minoan Realities. Theory-based Approaches to Images and Built Spaces as Indicators of Minoan Social Structures”, which took place in November 2009 at Heidelberg. Please find below the back cover text and table of contents.

For information and purchase please contact Diamantis Panagiotopoulos via email: diamantis.panagiotopoulos@zaw.uni-heidelberg.de

or by post:

Prof. Diamantis Panagiotopoulos
Institut für Klassische Archäologie
Ruprecht-Karls-Universität Heidelberg
Marstallhof 4
D-69117 Heidelberg

or Ute Güntel-Maschek: uteguenkel@gmx.net

Best regards,
Diamantis Panagiotopoulos
Ute Güntel-Maschek

BACK COVER TEXT

What is the social role of images and architecture in a pre-modern society? How were they used to create adequate environments for specific profane and ritual activities? In which ways did they interact with each other? These and other crucial issues on the social significance of imagery and built structures in Neopalatial Crete were the subject of a workshop which took place on November 16th, 2009 at the University of Heidelberg. The papers presented in the workshop are collected in the present volume. They provide different approaches to this complex topic and are aimed at a better understanding of the formation, role, and perception of images and architecture in a very dynamic social landscape. The Cretan Neopalatial period saw a rapid increase in the number of palaces and 'villas', characterized by elaborate designs and idiosyncratic architectural patterns

which were themselves in turn generated by a pressing desire for a distinctive social and performative environment. At the same time, a new form of imagery made its appearance in a broad spectrum of objects and spaces which were 'decorated' with meaningful motifs chosen from a restricted and repetitive pictorial repertoire. This standardized repertoire indicates the configuration of a coherent pictorial program which was implemented in several social situations. The present volume is intended not only for specialists in Minoan culture but also for readers who are interested in the social dimension of images and architectural remains and especially in issues relating to their materiality, use and perception.

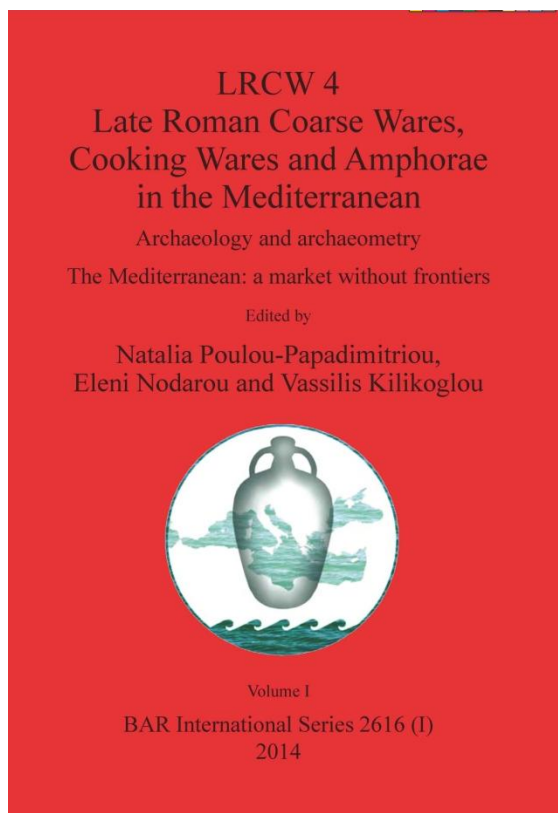
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**LRCW 4 - LATE ROMAN COARSE WARES,
COOKING WARES AND AMPHORAE IN THE
MEDITERRANEAN. ARCHAEOLOGY AND
ARCHAEOLOGY. THE MEDITERRANEAN:
A MARKET WITHOUT FRONTIERS. BRITISH
ARCHAEOLOGICAL REPORTS
INTERNATIONAL SERIES 2616 (2 VOLUMES)**

Natalia Poulou-Papadimitriou, Eleni Nodarou and Vassilis Kilikoglou (eds) 2014. **LRCW 4** *Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean. Archaeology and archaeometry. The Mediterranean: a market without frontiers*. British Archaeological Reports International Series 2616 (2 volumes).

Proceedings from the fourth LRCW congress held at the Aristotle University of Thessaloniki between 7-10 April 2011, this volume is arranged to follow the thematic sessions of the conference rather than by geographical area: archaeology and economic history, production centers, distribution and consumption, regional contexts-east Mediterranean, regional contexts-west Mediterranean, and the Mediterranean: a market without frontiers. In this way it brings together research on similar issues across the Mediterranean, stressing the economic character of the sites and assemblages and culminating with the concept that the Mediterranean is after all an open way, a *mare nostrum* connecting the western to the eastern part.



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RADIOCARBON DATING OF THE
NEOLITHIC LAKESIDE SETTLEMENT OF
DISPILIO, KASTORIA, NORTHERN GREECE,
RADIOCARBON, VOL 56, NR 2, 2014,
P 511–528

Yorgos Facorellis, Marina Sofronidou, Giorgos Hourmouziadis

Abstract

Dispilio is the only excavated Neolithic lakeside settlement in Greece. Archaeological research provided evidence that the site was continuously used from the Early Neolithic (~6000 BC) to the Late Chalcolithic period (~1200 BC, Mycenaean period). During several archaeological campaigns, a portion of the settlement has been excavated that enabled a sufficient understanding of the architectural layout of homes, the building materials, and the organization of space, while the finds (fragments of pottery, stone and bone tools, anthropomorphic and zoomorphic clay figurines, miniature representations of objects also on clay, animal and fish bones, charred cereal grains, and other fruits) provided information on the everyday lives of the Neolithic inhabitants. A series of charcoal and wood samples, originating mostly from the Middle and Late Neolithic layers of the site, were radiocarbon dated and their dates range from ~5470 to 4850 BC. The most unexpected of the finds, a wooden tablet from the lake bearing engraved symbols, was ^{14}C dated to 5260 ± 40 BC. In addition, clay tablets and pottery vessels engraved with similar symbols were also unearthed from layers dated to the same period. If this proves to be a primary source of written communication, the history of writing should be reconsidered and Neolithic societies should not be considered “societies without writing.”

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Please visit the site:

<https://journals.uair.arizona.edu/index.php/radiocarbon/article/view/17456/pdf>

EΙΔΗΣΕΙΣ - NEWS RELEASE

IN IRAQ, LOST WONDER OF WORLD CRUMBLES, BOMBS EXPLODE, BY MANUELA HOELTERHOFF

Ozymandias, king of kings, meet Sennacherib, king of the world.

About 700 years before the birth of Christ, the restless Assyrian listed his deeds on palace walls and artifacts.

“I led vast armies,” Sennacherib writes. “I made the desert bloom and built splendid palaces in Nineveh. Best of all, when the king of Judea misbehaved, I stuck him in a birdcage for a while.”

That’s a highlight from the annals he left in cuneiform on a curious eight-sided object now housed in the British Museum. I paraphrase slightly.

Did Sennacherib (who reigned from 705 to 681 BC) also build the legendary Hanging Gardens of Babylon, one of the ancient world’s seven wonders?

Credit usually flows to Nebuchadnezzar II, a later Babylonian king who actually lived in Babylon. He makes several appearances in the Holy Bible and wanders singing through the Hanging Gardens in a tuneful opera by Verdi.

Yet, the ruins of Babylon, now some 50 miles south of Baghdad, show no signs of an unusual arboretum, not even a red-hatted ceramic dwarf or two.

Comfortable Shoes

Enter Stephanie Dalley, a low-keyed pro-Assyrian British archaeologist who has already published a book on the “Mystery of the Hanging Garden of Babylon” and now presents her evidence in that most engaging PBS series, “Secrets of the Dead.”

We follow Dalley as she packs her sun hat and comfortable shoes for Iraq, where she sifted through ancient sands as a young woman in 1967.

Dalley clearly adores the Assyrian megalomaniac, whose handsome profile would propel many of us to dust off a few clay tablets in brain-baking 100-degree heat. One of the few people on the planet who understands cuneiform, she reads from Sennacherib’s annals and stands in front of impressive facades gorgeously incised with flowers and trees.

In a very interesting segment, Dalley visits Harvard’s Jason Ur in the northern mountains of Iraq. The cool Ur has found a vast network of canals using declassified satellite mapping programs developed by the U.S. military.

So how wide was the canal? She asks. Wide! The waterway running from the north to Nineveh was as wide as the Panama Canal, he tells her.

Sennacherib's engineers were amazing. To surmount a tricky bit of landscape, they constructed an aqueduct of 2 million carefully fitted blocks of stone.

Mosul Explodes

If Sennacherib wanted to do a little gardening, he certainly had the water.

"We've just been looking in the wrong place," says Dalley.

Nineveh today is part of Mosul, Iraq, a dangerous city. Just as she arrives, a car bomb explodes and takes down part of a street and a few more citizens.

Iraq's contemporary ruins contribute a feeling of dread and melancholy to her expedition into the past.

Nineveh turns out to be off-limits these days to foreigners. Two courageous local men volunteer to videotape the ruins. In the tape they bring back, Nineveh looks like the wasteland where Shelley's Ozymandias is spending eternity:

"The lone and level sands stretch far away."

But archaeologists can conjure up entire cities from broken pottery shards. Looking at the video, Dalley is positive she's identified a section just right for terraced gardens. It's shaped like an amphitheater and would have risen above the city with trees growing into the sky.

Here's an idea: Let's start a campaign to rebuild old Nineveh (and maybe Babylon while we are at it). Oh profiteers, politicians and people of the great empire of the United States, get out your checkbooks and watering cans! Let's do something positive! Let's construct a fantastic new city filled with flowers and hope and hospitals for the maimed, a city of Hanging Gardens festooned with signs that say: "So sorry about our big goof."

New Museum

The Assyrians loved music. Musicians playing lyres and flutes decorated their palace walls. But what did they sound like? New York's New Museum has just opened an exhibition by the intriguing Italian artist Roberto Cuoghi, who works in many dimensions. The piece is a lament for ancient Assyria featuring strange instruments he built himself. Go.

(Manuela Hoelterhoff is an executive editor at Bloomberg News. Any opinions are her own.)

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Please visit the site: <http://www.bloomberg.com/news/2014-04-30/in-iraq-lost-wonder-of-world-crumbs-bombs-explode.html>

ARCHAEOLOGY: BUST OF ALEXANDER THE GREAT FOUND IN CYPRUS

Archaeologists in Cyprus found a marble bust of Alexander the Great - considered one of history's most successful commanders - in a second three-aisled basilica that was brought to light on the site of Katalymmata ton Plakoton, of the Akrotiri peninsula, as GreekReporter website writes. Excavations by the Cyprus Antiquities Department in the area have been in progress since 2007 when the first basilica was revealed. It is believed that the two basilicas are part of a monumental ecclesiastical complex which according to Eleni Procopiou, an area officer for the Antiquities Department, is related to St John the Merciful, Patriarch of Alexandria, the patron saint of Limassol. The first basilica is a burial monument 36 meters in width and 29 meters in length. Procopiou stated that the second basilica is also a burial monument 20 meters in width and 47 meters in length. It is estimated that the findings date back to the second decade of the 7th century, between 616-617 A.D.

Please visit the site:

http://www.ansamed.info/ansamed/en/news/sections/culture/2014/04/28/archaeology-bust-of-alexander-the-great-found-in-cyprus_0d948236-a46e-426c-a403-82aacd9a0234.html

THE SURPRISINGLY SIMPLE WAY EGYPTIANS MOVED MASSIVE PYRAMID STONES WITHOUT MODERN TECHNOLOGY, BY TERRENCE MCCOY

Few have traveled to the pyramids of Egypt and not wondered how an ancient civilization without modern technology could have constructed structures so large they can be viewed from space. Some have theorized they were built inside out.

On the flakier side, some say aliens did it.

Perhaps the most confounding mystery of all involves how incredibly large stones made their way to the middle of the desert without massive mechanical assistance. No camel, even the Egyptian kind, is that strong.

The truth, researchers at the University of Amsterdam announced this week in a study published in the journal *Physical Review Letters*, may actually be quite simple. It has long been believed that Egyptians used wooden sleds to haul the stone, but until now it hasn't been entirely understood how they overcame the problem of friction. It amounts to nothing more, scientists say, than a "clever trick."

They likely wet the sand. "For the construction of the pyramids, the ancient Egyptians had to transport heavy blocks of stone and large statues across the desert," the university said. "The Egyptians therefore placed the heavy objects on a sledge that workers pulled over the sand. Research ... revealed that the Egyptians probably made the desert sand in front of the sledge wet."

It has to do with physics. The sort of sledges the Egyptians used to transport the two-ton loads of stone were pretty rudimentary. They were wooden planks with upturned edges. Dragging something that heavy through hot sand would — unsurprisingly — dig into the grains, creating a sand berm that would make progress nearly impossible. It "was perhaps observed by the Egyptians that in [a] dry case, a heap of sand forms in front of the sled before it can really start to move,"

says the study, authored by a team of eight researchers led by Daniel Bonn.

The only way around that problem would be to constantly clear the sand out of the way, making a tedious process even more tedious.

Damp sand, however, operates very differently. According to the research, "sliding friction on sand is greatly reduced by the addition of some — but not that much — water." So this time, researchers placed a laboratory version of an Egyptian sledge in a bin of sand that had been dried in the oven. Then they threw down some water, and measured the grains' stiffness. If the water had the appropriate level of wetness, something called "capillary bridges" — extremely small droplets of water that glue together individual grains of sand — would form.

These bridges not only stopped the sled from forming sand berms but also cut by half the amount of force required to move the cart. “I was very surprised by the amount the pulling force could be reduced — by as much as 50 percent — meaning that the Egyptians needed only half the men to pull over wet sand as compared to dry,” Bonn told The Washington Post.

Indeed, he says the experiments showed the required force decreased in proportion to the sand’s stiffness. “In the presence of the correct quantity of water, wet desert sand is about twice as stiff as dry sand,” the university says. “A sledge glides far more easily over firm desert sand simply because the sand does not pile up in front of the sledge as it does in the case of dry sand.”

Too much water, however, would create separate problems. “The static friction progressively decreases in amplitude when more water is added to the system,” the study says.

Adding more evidence to the conclusion that Egyptians used water is a wall painting in the tomb of Djehutihotep. A splash of orange and gray, it appears to show a person standing at the front of a massive sledge, pouring water onto the sand just in front of the progressing sled. What this man was doing has been a matter of great debate and discussion.

“This was the question,” Bonn wrote in an e-mail to The Post. “In fact, Egyptologists had been interpreting the water as part of a purification ritual, and had never sought a scientific explanation.

And friction is a terribly complicated problem; even if you realize that wet sand is harder — as in a sandcastle, you cannot build on dry sand — the consequences of that for friction are hard to predict.”

He said the experiment not only solved “the Egyptian mystery, but also shows, interestingly, that the stiffness of sand is directly related to the friction force.”

In all, the scientists say, “the Egyptians were probably aware of this handy trick.”

Please visit the site: http://www.washingtonpost.com/news/morning-mix/wp/2014/05/02/the-surprisingly-simple-way-egyptians-moved-massive-pyramid-stones-without-modern-technology/?tid=pm_pop

MORE (OR LESS) ON MOVING BIG STONES AGAIN

Avid for their moment of fame and funds today's scientists and scholars too often go viral with unwarranted claims, even to the point of crossing the line of veracity. Are we having a case in point here?

At any rate my scholarly conscience tells me that the following state of affairs should not go unmentioned in the current media-hype sparked by the Amsterdam team of physicists/experimental archeologists, as it would seem that at least part of their boasting deserves a degree of debunking.

With reference to the man at the front of Djehutyhotep's sledge Professor Bonn and his team overrate their ingenuity and state an outright untruth when saying "In fact, Egyptologists had been interpreting the water as part of a purification ritual, and had never sought a scientific explanation."

In actual fact the hypothesis that the water being sprinkled right in front of the processing sledge was intended to reduce the pulling force needed was already put forward by Egyptologists ages ago; it has since been commonly known in their circuits, and the idea can be found in many studies of this particular scene and in the Egyptological handbooks at large. To just quote from the authoritative Lexikon der Aegyptologie, vol. 5 (Wiesbaden: Harrassowitz, 1984), p. 657, article "Schlitten" [= Sledge]: "Der Schlitten wurde von Menschen bzw. oder von Rindern (...) gezogen. Zur Erleichterung der Fortbewegung konnte der Untergrund angefeuchtet werden," with footnote (6) referring to Djehutyhotep's tomb as an example. [in English translation: "the sledge would be pulled forward by humans and/or oxen. In order to facilitate its progression the soil was optionally moistured."]

Ironically, it does not take an accomplished Egyptologist to reach this awareness; it can publicly be found on popular websites, too:
http://www.osirisnet.net/tombes/el_bersheh/djehout... , scroll down to the paragraph on view 27.

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MYSTERIOUS BURIED ARTIFACTS DISCOVERED IN EGYPT'S VALLEY OF THE KINGS, BY OWEN JARUS

Four deposits of artifacts possibly buried as a ritual act of sorts before the construction of a tomb have been discovered in Egypt's Valley of the Kings.

The so-called foundation deposits, arranged in a boxlike shape, contain a mix of artifacts, including the head of a cow, a vase painted in blue and flint blades that have wooden handles that are still preserved after more than three millennia.

The Valley of the Kings was used to bury Egyptian royalty during the New Kingdom (1550 – 1070 B.C.) period. The discovery was made in its "western valley," an area sometimes called the "valley of the monkeys" after a scene depicting 12 baboons was discovered in one of its tombs.

"Previously discovered foundation deposits in the Valley of the Kings have always been associated with a nearby tomb," write Afifi Ghonim and Glen Dash in the abstract of a presentation they gave recently at the Current Research in Egyptology conference in London.

The four deposits of artifacts found at Egypt's Valley of the Kings, in a boxlike shape. There should be a fifth deposit on the axis of the undiscovered tomb and that deposit has yet to be found.

Ghonim, an archaeologist with the Egyptian Ministry of State for Antiquities, was field supervisor of the Egyptian expedition to the valley that took place between 2007 and 2011, and Dash led a team that did ground-penetrating radar work. This expedition, led by Zahi Hawass, was the largest since Howard Carter discovered King Tutankhamun's tomb in 1922. It has resulted in numerous discoveries and the collection of data, which will take many years to fully analyze and publish.

"We identified many new inscriptions, recorded many new workmen huts, and registered hundreds of distinctive finds, including ostraca [writing inscribed on pottery]. Our work in the western end of the Western Valley left us tantalizingly close to finding a new tomb," Ghonim told the London audience. Their presentation in London focused on the team's work in the western valley. Additional finds made in other parts of the Valley of the Kings include an ancient flood control system.

It's been an exciting month for Valley of the Kings research. In addition to news of the foundation deposits, a team from the University of Basel in Switzerland announced the discovery of the remains of 50 mummies (some of them children) in a tomb in the eastern valley.

Ritual offerings

The newfound deposits were likely laid out as the foundation for a tomb.

"Foundation deposits are ritual offerings placed in front of or around a tomb or temple most likely at its commencement. While each deposit is only a square meter or less in size, such deposits contain a fascinating array of offerings," Ghonim told Live Science in an email.

Here, a cow's head, a blue painted vase, flint blades, ceramics and other artifacts from four deposits possibly buried as a ritual act of sorts before the construction of a tomb in what is now Egypt's Valley of the Kings.

"Usually included are miniature versions of the tools used in the tomb or temple's construction, miniature offering vessels sometimes with offerings intact, and food offerings such as a calf's head and limbs," he said. "Only a few foundation deposits have been found in the Valley of the Kings, and even fewer have been found intact."

The researchers suspect there is an undiscovered tomb nearby. "If there is one nearby, however, it is well hidden. Despite our determined efforts, we were not able to locate it," Ghonim said.

These foundation deposits are usually laid out so that four of them form a box shape and a fifth is placed on the axis of the tomb. "We found the four deposits that made up the box, but not the fifth. Perhaps it too is there, awaiting discovery in front of the tomb," Ghonim said.

Where's the Tomb?

It took several seasons for Carter to find King Tutankhamun's tomb in 1922, and, even with modern-day technology, finding a tomb in the Valley of the Kings is still challenging.

Perhaps there is no lurking tomb and the deposits were created for a tomb that was started but not completed, the researchers say.

If the deposits belong to an incomplete tomb, they may have been laid down for the burial of pharaoh Amenhotep IV or a member of his family. Amenhotep IV, who later changed his name to Akhenaten (also spelled Akhenaton), unleashed a religious revolution that saw Egyptian religion focus on the worship of the sun disk, the Aten. He built an entirely new capital at a place now called Amarna, but his revolution did not last, with his religious changes collapsing shortly after his death in 1336 BC.

"If it was Amenhotep IV, he would have begun construction here before abandoning the site and moving to Amarna as Akhenaton," Ghonim told the London audience. "The foundation deposits could have been laid down before the site was abandoned. Work here may then have begun again during the reign of Tutankhamen or Ay [his successors], and at that time the foundation deposits, now forgotten, were covered over with an additional layer of fill to level the area for the construction of workmen's huts."

Ghonim told Live Science that archaeologists are trying to determine a precise date for the foundation deposits, something that will shed light on this mystery.

Please visit the site: <http://www.livescience.com/45271-artifacts-discovered-in-egypt-valley-of-the-kings.html>

HUNLEY FINALLY READY TO REVEAL ITSELF, BY BRIAN HICKS

The H.L. Hunley may not hide its secrets for much longer.

Today, scientists at the Warren Lasch Conservation Center will immerse the Civil War-era submarine in a caustic bath of sodium hydroxide and water to begin a long-awaited conservation process that is expected to last about five years.

But within a few months, conservators and archaeologists expect to get their first look at the sub's iron hull - and it may hold clues that finally reveal why the Hunley sank off Charleston 150 years ago.

"We have been waiting for this for years," said conservator Nestor Gonzalez. "Everything we're doing here is to preserve the Hunley as it was and to preserve information recorded on the sub. Now we will finally get to see the hull."

The Hunley conservation project is one of the most complicated in maritime history. This is the only complete ship to ever be conserved in this fashion, and it may be the largest artifact ever preserved with sodium hydroxide.

It will test the capabilities of one of the most advanced maritime conservation facilities in the world. The 40-foot iron submarine is a complex piece of machinery with hundreds of nooks and crannies that will have to be preserved to prevent the sub from rusting away.

The first step will be the most revealing. In the 136 years that the Hunley lay buried beneath the Atlantic seabed, a hard layer of sand and shell formed on the hull.

That concretion, as scientists call it, has protected the Hunley - but it also obscured many details of the hull. The concretion has been left on the sub since its recovery in 2000 for protection.

Gonzalez expects the sodium hydroxide will take only a few months to loosen the hardened sediment enough to allow scientists to scrape it off. Scraping could take months, even with a team of conservators working daily.

Michael Scafuri, Hunley archaeologist, said the concretion has been mapped, photographed and recorded with 3-D imaging to make sure they have every bit of information possible from the Hunley's protective shell.

And now they are ready to see what lies beneath.

"Under that concretion is the possibility of new information about the attack," Scafuri said.

With the shell and sand removed, Scafuri said scientists should learn more about the Hunley's design and operations, and may be able to tell what caused the submarine to sink.

The Hunley disappeared off Sullivan's Island on Feb. 17, 1864, shortly after it sank the Union blockader USS Housatonic by ramming a torpedo into its flank. It was the first successful submarine attack in history, but the mystery of what happened after has endured for a century and a half.

The submarine was buried beneath the Atlantic seabed until 1995, when a dive team funded by Clive Cussler discovered it less than a mile from the Housatonic wreckage. Removing the concretion is perhaps the most anticipated step in the conservation process, but it is just the beginning.

On Wednesday, scientists prepared the Hunley for its caustic bath and added giant jugs to the sub's tank to help with displacement and reduce the amount of chemicals and water needed by about 8,000 gallons.

Gonzalez said the 76,000 gallon tank will be filled with a caustic mixture that is 99 percent water and 1 percent sodium hydroxide. That solution will start a chemical reaction that will extract salt from the iron hull - salt that soaked into it over a century. The solution will be changed out periodically until all the salt has been removed from the hull.

At that point, it will be safe to display the Hunley without immersing it in water.

This has been the conservation plan from the beginning, and scientists are committed to it. Gonzalez and the other scientists are excited to finally see the hull, but they are also a little worried about soaking a unique artifact in chemicals so dangerous the entire lab has had to be retrofitted for safety. The new safety measures are designed to protect the sub and the scientists, and to allow the lab to remain open for public tours.

"It's like going in to your doctor for a basic procedure," Gonzalez said. "It's safe, but there's always a risk."

But the greater risk, said Senior Conservator Paul Mardikian, is to do nothing. The cold water and mild electrical current that have preserved the sub for the past 14 years cannot protect it forever.

"This is the only way to remove the salt," Gonzalez said.

Mardikian said this is not just the only way to save the sub, it is the last chance to finally answer that nagging question: Why did the Hunley sink

Please visit the site:

<http://www.postandcourier.com/article/20140501/PC16/140509994>

MOUND EXCAVATION REVEALS **TRANSITION FROM HUNTING TO HERDING** **IN NEOLITHIC SETTLEMENT,** **BY BOB YIRKA**

A team of researchers with members from several countries has found evidence of the birth of pre-ceramic Neolithic populations in a region of what is now Turkey. In their paper published in Proceedings of the National Academy of Sciences, the team describes how excavations of various levels at Aşıklı Höyük, reveal the history of the people that lived there.

Read more at: <http://phys.org/news/2014-04-mound-excavation-reveals-transition-herding.html#jCp>

One of the great fascinating areas of archeological research is piecing together parts of the historical record that reveal major transitions, one of which is the move by early peoples from hunters to herders or farmers. In this new effort, the research team excavated a mound that developed due to human activities starting approximately 9000 years ago. The mound grew (to a height of approximately 52 feet) as people gathered and used mud and wood for building structures. As with many ancient cities, towns or settlements, levels developed, each representing a period of time. In this latest effort, the researchers focused on the deepest layers, representing the time when people first came to live there.

At the lowest level, the researchers found artifacts that indicated the people ate mostly meat from wild animals, such as deer, hares, fish, etc. Moving up one level, which represented a time span of just a few hundred years, the researchers found the diet had changed to one consisting mainly of meat from domesticated animals (goats and sheep) which of course marks the move from hunting to herding, or at least to raising animals for food. Other artifacts revealed that the animals were kept very near to the human dwellings, suggested they were stabled. The findings show that the transition from hunting to herding occurred over a remarkably short time frame, and offers evidence of the birth of pre-ceramic Neolithic populations in the area.

The researchers believe that the people who lived in or on the mound at the time that animals were being domesticated were also cultivating grain—for use in feeding both themselves and their animals. It was another major shift, they note, from a nomadic existence to one where groups of people settled in one place and grew their own food. Doing so would have required a wide array of adaptations that the team hopes to study as they continue to excavate the site.

Abstract

Aşıklı Höyük is the earliest known preceramic Neolithic mound site in Central Anatolia. The oldest Levels, 4 and 5, spanning 8,200 to approximately 9,000 cal B.C., associate with round-house architecture and arguably represent the birth of the Pre-Pottery Neolithic in the region. Results from upper Level 4, reported here, indicate a broad meat diet that consisted of diverse wild ungulate and small animal species. The meat diet

shifted gradually over just a few centuries to an exceptional emphasis on caprines (mainly sheep). Age-sex distributions of the caprines in upper Level 4 indicate selective manipulation by humans by or before 8,200 cal B.C. Primary dung accumulations between the structures demonstrate that ruminants were held captive inside the settlement at this time. Taken together, the zooarchaeological and geoarchaeological evidence demonstrate an emergent process of caprine management that was highly experimental in nature and oriented to quick returns. Stabling was one of the early mechanisms of caprine population isolation, a precondition to domestication.

More information: A forager–herder trade-off, from broad-spectrum hunting to sheep management at Aşıklı Höyük, Turkey, Mary C. Stiner, PNAS, DOI: 10.1073/pnas.1322723111

Please visit the site: <http://phys.org/news/2014-04-mound-excavation-reveals-transition-herding.html>

WET-SIEVING UNCOVERS ADDITIONAL HUMAN RELICS, BY GEOFF VIVIAN

A WA archaeology consultancy has conducted a cost-benefit analysis of improved treatments for sediment samples taken from ancient occupation sites.

Archaeologists examine sediments for evidence of a site's human history.

Archae-Aus research manager Dr Caroline Bird says archaeologists in private practice typically dry-sieve excavated material for private clients, but wet-sieving achieves much better results.

“It was really to see whether the time spent getting the extra data from doing more fine sieving actually was justified in terms of cost,” she says.

While wet-sieving is more time consuming than dry-sieving, Dr Bird says it dramatically improves the speed and quality of analysis as it is easier to examine clean gravel than dirty gravel.

She says they prefer to analyse samples of visible strata in a cave floor, but if they detect no change of soil colour they sample “spits” of about five centimetres in depth.

Archae-Aus staff sampled two such spits from one site, and one spit from another, in Nyiyaparli native title lands near Newman in the Pilbara.

They passed the samples through 6mm and 3mm mesh sieves on-site, as per usual practice.

In their Perth laboratory they washed and wet-sieved material caught in the 3mm sieve.

Dr Bird says this resulted in a much better recovery of objects such as charcoal and bone fragments; and artefactual stone remains such as tiny flakes.

She says this gives a much better idea of how the sites were used.

Minute flakes, for example, indicate a tool making site, and also whether toolmakers used local stone or raw materials from another location.

In the paper just published, she cites Langley et al (2011) who notes that wet-sieving can turn up extremely rare items undetectable by dry sieving, such as beads and bone artefacts.

While she is yet to find any of these herself, Dr Bird says they do occasionally occur in Australian ice age sites.

She says samples taken from past excavations in South Africa, and wet-sieved decades later, have resulted in similar finds missed in the original studies.

“In terms of the quality of the result, there’s no question that you get a better result,” she says.

She says the present study shows wet-sieving costs are 10 – 50 percent higher, depending on the site’s complexity.

Consulting archaeologists assess mine sites to comply with the Aboriginal Heritage Act’s site protection requirements, and terms laid down under individual Native Title agreements.

Notes:

Bird et al (2014) Time and efficiency in data recovery: an experiment comparing wet and dry sieving in Pilbara rockshelter excavations in Journal of the Australian Association of Consulting Archaeologists Vol 2 Article 1.

Please visit the site: <http://www.sciencewa.net.au/topics/technology-a-innovation/item/2806-wet-sieving-uncovers-additional-human-relics>

RECREATING THE SCENT THAT DROVE THE MEN OF ANCIENT JERUSALEM WILD, BY ROY (CHICKY) ARAD

Guy Erlich left his life as a left-wing activist to grow the plants of the Bible, including one used in ancient Israelite perfumes, on his West Bank farm.

It's hard to describe Guy Erlich's fascination with medicinal herbs and perfumes from the Bible without using words like "desire" — or even "madness." Erlich, 43, gave up a steady job, sold his home in Jerusalem and used up his inheritance and savings to grow plants mentioned in the Bible, some of which had never been domesticated. On his Balm of Gilead farm on kibbutz Almog near the Palestinian city of Jericho, he developed an obsession with "Commiphora gileadensis," which many researchers identify as the plant the Bible calls persimmon.

The biblical persimmon, which grew in what is now Israel's Ein Gedi region and is unrelated to the orange fruit we know by the name today, was one of the most important medicinal herbs and sources of fragrance in the ancient world. It was a leading export of the kingdom of Judea, worth its weight in gold.

Seven years ago, Erlich attended a lecture at the Ein Feshkha nature reserve and archaeological site on the Dead Sea, where he heard about Commiphora gileadensis for the first time. The plant used to grow here, but has been absent for 1,500 years. "It was like being struck by lightning," he said. "I decided I wanted to bring the persimmon back to the Dead Sea and restore its glory."

Erlich began searching the world for seedlings and at the same time researching the secrets of ancient cosmetology. After many months, he discovered that several seedlings existed. "Four years before I got into this field, a German researcher had tried to grow persimmon," Erlich said. "He smuggled a few seeds from western Saudi Arabia to London, and they ended up in the botanical garden in Jerusalem. But it was too cold there, the experiment failed, and the bush was divided among the researchers. I got the first seedling from doctor Elaine Solowey from kibbutz Ketura, whose student I became. Today, I already have 2,000 seedlings."

After years of working in social justice, Erlich hoped Balm of Gilead farm, which overlooks the Dead Sea from the West Bank, would provide an income that would allow him to support his family. But the opposite happened. "Instead of making a living from the persimmon, I'm supporting it," he ruefully admits. In an attempt to find assistance, Erlich contacted the Business Development Center, but nobody there believed that resurrecting biblical fragrances would be the next big thing in business. "The counselor I spoke with told me, 'You're a dreamer. You have big dreams. Agricultural development and industry cost a lot of money. Go with tourism.' But my heart told me to bring back the fragrance of the persimmon."

After the meeting, Erlich began thinking about developing a visitors' center at the farm. "I thought maybe persimmon by itself wasn't enough, so I brought in other plants. Of the

11 ingredients in the [Jewish Holy] Temple incense, I have five plants, and I will be getting two more. I have become an obsessive collector, and it appears that today, I have the biggest collection of biblical herbs in the Middle East.”

Erlich grows the biblical plants myrrh and frankincense, which have more established contemporary identities, in a greenhouse that was converted from a turkey run. There, he also grows hundreds more plants, including henna (*Lawsonia alba*), which is mentioned in the Song of Songs. He believes that Balm of Gilead farm is the largest farm in the world that grows the biblical persimmon. “I may also be the biggest grower of frankincense, which usually grows wild,” he says. “On the other hand, to say that you have the biggest farm for persimmon and frankincense is like saying you’re the world champion of solitaire.”

A leftist settler

Guy Erlich’s new life, as a farmer living and working on a settlement and trying to locate and cultivate plants that were used in the Temple incense, came as a bit of a surprise. Erlich, a graduate of Hebrew University Secondary School — known colloquially as Leyada — comes from the heart of the secular left wing. He wrote for the local Jerusalem newspaper *Kol Ha’ir*, shouted at demonstrations for the opening of businesses on Shabbat, was one of the people behind the non-Orthodox kosher certificate initiative, established the Wellspring for Democratic Education movement as an answer to Shas, served on the Jerusalem City Council as a member of Ornan Yekutieli’s secular party and met with the Palestinian justice minister to institute non-religious burials in the Palestinian Authority.

“Guy never fit into any box,” said Sharon Dolev of Meretz, who, together with him, submitted a petition to the High Court of Justice against the rabbinate and is not surprised by an update on his life. Erlich was never a farmer and says the plants he raised in his home died because he forgot to water them. “Fortunately, I have a computerized irrigation system,” he says.

Erlich does not know whether he is a member of the left wing anymore, and it seems that not even he is all that clear on how he ended up a settler. “Reality is complicated,” he says. “If there is a peace agreement, I will leave, or maybe I will be a citizen of Palestine. We joked that maybe we’d establish a Jebusite state. I moved to Almog because I love the desert and the people who live there. Yes, it’s a settlement, but I don’t live in a community that is sitting on the Palestinians’ neck. The future here isn’t clear. I dragged people to the farm from Jericho who found they were interested in plants. Maybe in the end, we’ll be able to raise the persimmon together. Maybe I’m a leftist settler? I don’t know. Today, I believe less in the division between right and left, black and white, and I’m against boycotts. I’ve met right-wingers who were much more humane toward the Palestinians than leftists.”

Erlich says he was offered an excellent job in a coexistence organization on condition that he “come back home.” He refused. “It was my dream job, with a salary I’ve never had in my life, and I had a dilemma. I understand their demand, but I’m in a different place. It’s obvious to me that I live in a settlement, but I don’t live on the ruins of any Arab community, and I’m not hurting anyone.”

The farm has two groups of followers, both of them unusual. Officials of the Temple Institute have their hearts set on the incense ingredients that Erlich and his colleagues are raising, which will help them reconstruct the Temple rites for when the Third Temple is built. “When [Rabbi] Yisrael Ariel, the head of the Temple Institute, was here, I said that if the Temple came down from heaven, I would be happy to supply incense for it. But I’m not in favor of building the Temple. He told me that I didn’t know what my purpose was and that I was crazy. It was funny to hear that from him.”

The other group discovered frankincense, which is used in Muslim ceremonies. Erlich says that the ambassador of a large Muslim country that has no relations with Israel visited Israel in honor of Peres’ birthday. The Foreign Ministry took him to the farm in Almog because frankincense has gone extinct in his country from overuse, and all the efforts to domesticate it there failed.

After the meeting, it was agreed that farmers from a third country would come to Erlich’s farm to learn the secrets of domesticating and cultivating frankincense to save it in the ambassador’s country.

The perfume of kings and queens

Erlich opens the refrigerator and takes out several kinds of skin cream that he made from the recipe of a third-century physician together with a bottle of perfume made from persimmon. He reverently puts a few drops of the perfume on my hat. I have high expectations.

After all, this was the Chanel No. 5 of the Queen of Sheba and Cleopatra, the oil that anointed the kings of Judea. The Talmud says the scent of persimmon is so enticing that it was among the reasons the Temple was destroyed: The women of Jerusalem would dab it near their heels, and when a young woman “saw a group of young men, she would stamp her foot, and the scent would diffuse in the air.”

Professor Zohar Amar claims the Romans besieged Masada because the Jewish rebels there used to raid the persimmon fields in Ein Gedi, which were an important source of revenue for Rome’s economy.

The scent is fairly disappointing next to these enticing historical theories. The scent, at first reminiscent of turpentine, turns slowly into a more pleasant eucalyptus-mint scent. “Would I say this is the best perfume in the world? No, I wouldn’t,” Erlich admits. “Scent is a matter of fashion, and we must remember that this was a time of strong odors. The Temple was one big barbecue, and the persimmon’s purpose was to lighten the smell. This was the perfume of kings and wealthy people.”

Erlich is not settling for turning the biblical persimmon into a perfume or cosmetic product. He is convinced that the ancient physicians, who spoke of the plant as a panacea, will be vindicated.

Two years ago, a study by Israeli microbiologist Rivka Ofir confirmed some of his feelings. Ofir used an enzyme found in a persimmon taken from Erlich’s greenhouse to kill 90 percent of cancer cells in an experiment. “My partners told me not to tell anyone about it because it sounds like megalomania, but it costs hundreds of millions of dollars

to produce and approve a medication, and we raised not even \$3 million for this tiny project. But all that's needed is for even 10 percent of the research and testimonies from the ancient world to be true, and we have something to tell. The problem is that the large pharmaceutical corporations don't like medications that come from plants, because they're hard to patent."

Erlich is married to Efrat, a kindergarten teacher. They have three children. He starts his day at 5:15 A.M. in the plant nursery and finishes at 6 P.M. He says his children are not enthusiastic about the plants and would rather be surfing the Internet. Erlich is not wild about the familiar orange persimmon ("the fruit that causes constipation," as he calls it), which is sometimes confused with the biblical persimmon that he grows. Recently, he received a plot of about 100 dunams (25 acres) of land from the Agriculture Ministry for an orchard at the entrance to Almog — much more than the 3.5 dunams (less than one acre) he has now. But he's having difficulty obtaining the necessary budget of several hundred thousand shekels to water the marly soil. At least his neighbors think better of him. "At first, they thought I was a strange person, but now that they've seen me stay with it for a few years, they want to help me."

Erlich speaks of purpose. "I have a cultural mission. Just like Chinese medicine, there is also a tradition of Jewish medicine that goes back many years, and the persimmon is the jewel in its crown."

Things have started looking up, business-wise, for Erlich. He says a large American company that makes essential oils invested money in trials and sent a distillery, which stands gleaming at the center of the farm. Erlich sends back small bottles of essential oils in hopes of signing a contract with the company, but admits to sleepless nights. "Uncertainty is not good for the soul," he says. "I'm not an experienced businessman. If I could make a living from this, it would be wonderful. I love the plants, and I would be happy to work with them."

Please visit the site: <http://www.haaretz.com/news/features/.premium-1.588729> [Go there for pix]

BYZANTINE ANCESTORS OF TABLET COMPUTERS FOUND IN YENIKAPI DIGGINGS

A wooden notebook found in a sunken ship during the Yenikapı excavation has impressed the archaeologists.

Yenikapı excavations that started nearly 10 years ago has brought back Istanbul's historical heritage to 8,500 years. A wooden notebook, which was found in a sunken ship, the replica of which will sail, is considered the Byzantine's invention akin to the likes of the modern-day tablet computer.

During archaeological excavations, experts have also found striking information on animal culture, such as the meat of many animals, like horses and wild donkeys were eaten in the ancient era.

Remains unearthed in the excavations drew great attention not only in Turkish, but also in world archaeology. The remains have survived as organic products, which greatly impressed the scientific world.

Within a project carried out by Istanbul University, the goal is to set the sunken ship, christened Yenikapı 12, sail again. The ship will be able to float by the middle of 2015.

Speaking about the remains, the project team member Associate Professor Ufuk Kocabaş said they had found organic products in Yenikapı area, which was known as Theodosius Port in Byzantine, a rare discovery. He said 60 percent of the sunken ship had survived in a preserved condition.

‘Miracle of Yenikapı’

“This was the first piece, which we have searched for as a doctorate thesis. Now we have information for the construction of the missing parts of the ship. Considering the amphoras in it, the ship's route was the Black Sea. We estimate that it dates back to the 9th century and engaged in trading from Crimea to Kersonesos. A section of the ship drew our attention. We found very interesting objects belonging to the captain and crew,” Kocabaş said.

Calling the objects the “miracle of Yenikapı,” Kocabaş said, “In one of the ships, we found something like today's notebook. It is made of wood and can be opened like a notebook. It has a few pages and you can take notes using wax. Also, when you draw its sliding part, there are small weights used as an assay balance. Yenikapı is a phenomenon with its 37 sunken ships and organic products. I think these organic products are the most important feature of the Yenikapı excavations.”

He said they had reached the archaeological excavations even 28 meters below the sea level, which is unbelievable. “The route that we are planning for vehicles will start from Bucoleon Palace. Significant pieces could be unearthed there.”

Professor Vedat Onar, the head of the team examining the animal remains unearthed in Yenikapı, said they had completed the largest horse collection of the Byzantine-era.

“Horses were killed for consumption, which we are seeing for the first time in these excavations. This type of meat was not much preferred in the Roman-era, but we see it in the Byzantine times. It is hard to see a horse older than 10-years-old. Their life was short. We have found remains from 57 kinds of animals. There was even dolphin and turtle hunting,” he said.

Please visit the site: <http://tinyurl.com/nwxyk9d>

5,600-YEAR-OLD TOMB FOUND IN EGYPT

Archaeologists in southern Egypt have discovered a 5,600-year-old preserved tomb and mummy predating the First Dynasty of the pharaohs, the antiquities ministry said Wednesday.

The tomb was built before the rule of king Narmer, the founder of the First Dynasty who unified Upper and Lower Egypt in the 31st century BC, the ministry said in a statement.

The tomb was discovered in the Kom Al-Ahmar region, between Luxor and Aswan, on the site of Hierakonpolis, the city of the falcon, which was the dominant pre-dynastic urban center and the capital of the Kingdom of Upper Egypt.

The archaeologists found an ivory statue of a bearded man and the mummy of the tomb's owner, who appeared to have died in his late teenage years, the ministry said.

The tomb's preserved state will provide new information on pre-dynastic rituals.

Please visit the site: <http://www.arabnews.com/news/567476> [Go there for pict]

CLIMATE CHANGE CAUSED EMPIRE'S FALL, TREE RINGS REVEAL, BY LINDA B. GLASER

A handful of tree ring samples stored in an old cigar box have shed unexpected light on the ancient world, thanks to research by archaeologist Sturt Manning and collaborators at Cornell, Arizona, Chicago, Oxford and Vienna, forthcoming in the June issue of the Journal of Archaeological Science.

The samples were taken from an Egyptian coffin; Manning also examined wood from funeral boats buried near the pyramid of Sesostri III. He used a technique called “dendro radiocarbon wiggle matching,” which calibrates radiocarbon isotopes found in the sample tree rings with patterns known from other places in the world that have already identified chronologies, such as the long European oak chronology or the bristle cone pine trees of North America.

Because the dating was so precise – plus or minus about 10 years – it helps confirm that the “higher” Egyptian chronology for the time period is correct, a question scholars have hotly debated. But the samples also showed a small, unusual anomaly following the year 2200 B.C. Paleoclimate research has suggested a major short-term arid event about this time.

“This radiocarbon anomaly would be explained by a change in growing season, i.e., climate, dating to exactly this arid period of time,” says Manning. “We’re showing that radiocarbon and these archaeological objects can confirm and in some ways better date a key climate episode.”

That climate episode, says Manning, had major political implications. There was just enough change in the climate to upset food resources and other infrastructure, which is likely what led to the collapse of the Akkadian Empire and affected the Old Kingdom of Egypt and a number of other civilizations, he says.

“The tree rings show the kind of rapid climate change that we and policymakers fear,” says Manning. “This record shows that climate change doesn’t have to be as catastrophic as an Ice Age to wreak havoc. We’re in exactly the same situation as the Akkadians: If something suddenly undid the standard food production model in large areas of the U.S. it would be a disaster.”

Manning is the Goldwin Smith Professor of Classical Archaeology and director of the Malcolm and Carolyn Wiener Laboratory for Aegean and Near Eastern Dendrochronology. Linda B. Glaser is staff writer for the College of Arts and Sciences.

Please visit the site: <http://www.news.cornell.edu/stories/2014/05/climate-change-caused-empires-fall-tree-rings-reveal> [Go there for pix]

FRESCOS FROM HEROD’S TIME AT MASADA RESTORED AND RETURNED TO NATIONAL PARK ITALIAN CONSERVATORS RETURN THE ARTWORKS THAT WERE SITTING IN A WAREHOUSE FOR 20 YEARS, BY SHIRLY SEIDLER

For 20 years, the frescoes that decorated the “Commandant’s Residence” (Beit Hamefaked) on top of Masada were stored away in a warehouse at the national park. This week, after a month’s work, a team headed by Italian expert renovator Prof. Maurizio Tagliapietra of the University of Verona and including employees of the Israel Parks and Nature Authority completed the restoration of another room on the top of the historic mountain.

The frescoes, which were discovered during the extensive archaeological digs conducted by Yigal Yadin in the 1960s, were glued to new backings and put back in their original locations on the walls at the time. But as time passed the effects of the weather, the high salt content of the air and vandalism by visitors eventually led to the decision to remove them and put them into storage. The frescoes were in a structure on Masada without a roof, and it was decided that only after a proper roof was built would they be returned.

The restoration of the frescoes and the completion of the renovations were made possible by a donation from a Jewish family in the United States.

“The frescoes are from the period of Herod,” said Tagliapietra. They are of geometric figures, with no human beings, and show no perspective, he said. The frescoes prove the room was the living quarters of commanders who were close to Herod and responsible for his personal security, as indicated by their proximity to the Northern Palace.

During the past month Tagliapietra, 70, exchanged his usual suit for shorts and sandals, more appropriate attire for the fortress near the Dead Sea. In 2003 he headed the restoration of another room at Masada, and says he felt the need to return to Israel and work on the frescoes, notwithstanding his family’s concerns about his poor health and the difficult conditions on the site.

This time his difficult work did not end with just reinstalling the frescoes. It also included teaching the Israeli staff various methods necessary to maintain the artwork. Each picture, which can be up to 1.5 meters by 0.5 meters, took over eight hours of work: emphasizing the pigments using paintbrushes and plaster made by mixing lime with sand, in order to get as close as possible to the original materials.

The four-person team posts daily updates on a Facebook page they created for the project. Followers from all over the world monitor their progress, which they document with photographs and explanations of the various processes.

Many young Israelis, most of them archaeology students, came to see the work on site, receiving impromptu lesson, after initially following the team on Facebook.

This is not the time to be so heavy and closed, Tagliapietra said. The knowledge must be spread and that is part of my work here, he said.

“Not just to preserve, but to teach.”

The guiding principle was to return the room the state it was in when uncovered in the 1960s. They used the photographs taken during the dig and were then able to replace the frescoes in exactly the right positions. They did not add anything that was missing in the original just to make things look more complete.

The most essential thing is to understand the importance of the maintenance and there is no value in bringing in a restoration team once a decade if you don't know how to maintain the art, Tagliapietra said.

Please visit the site: <http://www.haaretz.com/archaeology/.premium-1.591649> [Go there for pix]

PETRA, BUILT FOR THE SUN GODS?

BY DAISY CARRINGTON

Archaeoastronomers recently measured the celestial alignments of monuments in Petra, Jordan, and found many line up with the setting of the sun during solstices and equinoxes.

Few ancient civilizations have left an architectural footprint quite as indelible as the Nabateans did in Petra, southern Jordan.

Majestic temples, burial chambers and homes still stand, carved around 2,300 years ago from the rose-hued landscape.

Logic would dictate that the relics strewn throughout the 2.8 million square feet of Petra Archaeological Park would provide historians with a bounty of information about the ancient culture.

In fact, surprisingly little is known about ancient Nabatean life and traditions. An estimated 85% of the area has never been excavated, and there is precious little in the way of written records.

"I don't think we really understand what significance some of these structures truly had," says Megan Perry, an associate professor at East Carolina University's department of anthropology.

Recently, a team of archaeoastronomers sought to gain some insight into the function of these ancient structures by measuring their celestial alignments. Their findings, which were published in the Nexus Network Journal, suggests that the Nabateans purposefully built Petra's most sacred structures to align or light-up during celestial phenomena, including the summer and winter solstices and the equinoxes.

Juan Antonio Belmonte, the study's leader at the Institute of Astrophysics of the Canary Islands (IAC), notes that the effect is particularly stunning at Ad Deir, also known as The Monastery -- one of Petra's most visited attractions.

"The lighting is spectacular; the sun setting through the gate perfectly illuminates the sacred areas of the deep interior," he says.

"Apart from the beauty of the situation itself, the effect -- which would have been observable only a week or so before and after the winter solstice -- also gives you information about the purpose of the building."

Indeed, there's been much debate in the archeology community over the exact function of Ad Deir. Why was it built? Was it a tomb? A temple?

Prior to Belmonte's study, there haven't been any clear answers.

"With such an alignment, it's now clear that it was certainly a temple with an astral religious character," says Belmonte.

"This can help us understand the religious beliefs of the Nabateans, and also their way of controlling time. It shows they could monitor the lunar calendar by solar and lunar observation. We're really finding a lot of utility in these kind of measurements," he adds.

Perry, who was not involved in the study, but who co-heads The Petra North Ridge Project, says that while she finds the findings plausible, she's not entirely convinced by the methodology employed.

"I think the idea that the Nabateans could have done this is actually not that surprising; it sort of goes along with other aspects of their religion, and potentially their understanding of place and space," she says.

Perry has spent a lot of time studying the layout of monuments in Petra for clues as to whether the city was laid out organically, or -- as Belmonte suggest -- if it was planned.

"The tombs seem to be based on natural topography. Nothing in terms of their layout suggests a tie to any kind of solar orientation. If there was one, they'd all be facing the same way, but they surround the city and face in an infinite number of directions," she notes.

Belmonte, who measured the alignment of over 30 Nabatean monuments, both in Petra and at other sites throughout Jordan and Israel, says his measurements are too consistent to be a coincidence.

"When you study the alignments, you produce a histogram that has a certain credibility from a statistical point of view. If this is by chance, the probability is very small," he says.

Please visit the site: <http://www.cnn.com/2014/05/18/world/meast/petra-built-for-the-sun-gods/index.html>

ANGELS, TOILETS AND GRAFFITI REVEALED AT SUDANESE MONASTERY

A large toilet block and previously unknown inscriptions and graffiti have been recorded at a Nubian church in northern Sudan.

Set in the desert some 15 kilometres from the North Sudanese town of Merowe – in a region known for the Pyramids of the Nubian Pharaohs and more recently for the controversial Merowe Dam Project – lies the the Christian monastery at El Ghazali oasis. First discovered in 1821, it was excavated by Peter Shinnie and H.N. Chittick of the Sudanese Antiquities Service in 1953 and 1954.

The monastery's church is large by the standards of medieval Nubia, measuring 28.1 m long and 13.9 m wide and composed of mud brick resting on lower courses of dressed sandstone blocks. The layout was typically medieval Nubian, built in basilican style with a nave and two side aisles, the interior was plastered, and covered in graffiti.

Polish archaeologists and conservators have just completed a three-month mission in March this year where they began excavations east of one of the two medieval churches. They expected to find the cemetery which would have made up part of the Byzantine monastic complex, and this particular place was supposed to have been the location for the higher status burials. However, they were in for a surprise.

“Along the east wall of the monastery we excavated a row of 15 toilets. However it may sound and look, it is an important discovery.

Nowhere else in Nubia has such a large sanitary complex been discovered”, explained Dr. Artur Obłuski from the University of Chicago, leader of the expedition.

This was further proof that the nearby monastery had been inhabited by a large group of monks as well as visiting pilgrims. Obłuski explained that each toilet was at the end of a room in the shape of an elongated rectangle allowing some privacy.

In medieval Sudan, ceramic toilet bowls and toilet paper or a substitute was commonly used. The substitute was shards of pottery vessels, with their sharp edges smoothed for user comfort; many of these unusual artefacts were found during the excavation.

Conservation and discoveries

A group of conservators worked on site together with archaeologists (see header image). Their efforts focused on cleaning and protection of the plaster on the church which dated to the first half of the 7th-century CE.

“By removing a thick layer of mud, we restored part of the original appearance of the church, which is now glowing white from a distance.

The glow of light reflected in the African sun is so blinding that we could work on the south wall only in early morning or late afternoon” - described Cristobal Calaforra-Rzepka, head of the conservation work.

Cleaning of the plaster also allowed us to discover dozens of previously unknown inscriptions and drawings depicting both saints and images of Jesus. The study of the inscriptions is carried out by Dr. Grzegorz Ochała from the University of Warsaw. His analysis shows that, as in many other places in medieval Nubia, the cult of angels was extremely popular in al-Ghazali. Among the inscriptions on the walls of the North Church, Dr. Ochała identified the names of the four archangels: Michael, Gabriel, Raphael and Uriel.

One who carries an angel

Particularly important are the writings that were scratched on everyday ceramic vessels. This year the archaeologists discovered a ceramic bowl with an inscription by a priest named Angeloforos (one who carries the news). According to Dr. Ochała, this is a particular form of expression that reveals a reverence for the angels – male names containing references such as Angeloforos to bearers of the news or messengers.

Ghazali is one of two important places of worship in medieval Nubia located outside the Nile Valley. The monastery is located in Wadi Abu Dom, the valley crossing the desert Bajuda, which once was a busy trade route in the north-eastern Africa. The complex size is similar to the famous monastery of St. Catherine in Sinai, Egypt.

The Polish team will be returning to uncover and preserve more of this unique legacy from the Byzantine period. The mission operates under the auspices of the Centre of Mediterranean Archaeology, University of Warsaw, with funding from the University of Munster and the Qatar-Sudan Archaeological Project.

Please visit the site:

<http://www.pasthorizonspr.com/index.php/archives/05/2014/angels-toilets-and-graffiti-revealed-at-sudanese-monastery>

UNIQUE STATUE OF PHOENICIAN PRIEST **DISCOVERED IN SIDON**

A statue of a Phoenician priest has been uncovered at an excavation site in the southern city of Sidon, along with other antiquities, the most unique find for Lebanon in decades, the British Museum team announced Monday.

The priest, 115 centimeters high and dating back to the sixth century B.C., was found at the Freres College site, which has been under excavation for the last 16 years, the head of the excavation, Claude Doumit Serhal, announced at a press conference at the Lebanese Directorate General of Antiquities.

“Nothing comparable has been found in Lebanon since the early 1960s, and only three other examples originating from Sidon, Umm al-Ahmed and Tyre are housed in the Beirut National Museum,” the statement said.

The figurine is that of a male wearing a pleated kilt, known as “shenti,” with a pendant flap from the waist to the kilt’s hem. The left hand is in a closed fist and holding an unknown object, “probably a scroll or a handkerchief,” according to the statement.

Archeologists found the statue lying on its front, as it was re-used by the Romans and placed under a marble pavement in that position.

Three new rooms were also found in a third millennium B.C. public building, along with a 200-kilogram deposit of charred wheat called einkorn, 160 kilograms of broad bean and 20 burials belonging to both adults and infants from the second millennium B.C.

This year’s excavation has been extended over six months, having started in January, in order to prepare for the building of an on-site museum, the statement added.

Please visit the site: <http://www.dailystar.com.lb/News/Lebanon-News/2014/May-19/257031-unique-statue-of-phoenician-priest-discovered-in-sidon.ashx#axzz32CFzNPSi> [Go there for pix]

EGYPT: RESTORATION OF THE MONASTERY OF ST. GEORGE IN OLD CAIRO

The major restoration of the historic Greek Orthodox monastery of Saint George in Old Cairo is at its final stage. The monastery is a unique Rotunda in the Middle Eastern, which was a project carried out with the blessing of the Patriarch of Alexandria and All Africa, Theodore II.

According to Greek news, the official opening of the monastery is set to take place with magnificence and splendor, and in the presence of spiritual leading figures of the Orthodox Church and certain leaders of states. The opening will be taking place in the coming months, though a specific date has not been scheduled yet.

Furthermore, the official website of the Patriarchate of Alexandria noted: “The renovation of the complex of the ancient Basilica and the Patriarchal Monastery of St George in Old Cairo, which is a Pan-Orthodox and universal shrine of great religious and spiritual importance, is the pinnacle of the multifaceted renovation activities by His Beatitude.

The cracks in the walls, the settling of the ground and the changes in the existing masonry, had rendered the stability of this Eastern Rotunda of the East precarious, as it is based on a three-floored Roman tower of circular ground plan from the 1st century A.D. and which was a part of the fortification of Babylon. This joint project between archaeologists, engineers, architects and conservation workers, includes anchoring and reconstruction of the Roman tower, the newer church, as well as maintenance of the hagiography of Constantine Parthenis.”

Please visit the site: <http://world.greekreporter.com/2014/05/27/egypt-restoration-of-the-monastery-of-st-george-in-old-cairo/>

CLIMATE CHANGE DOOMED THE ANCIENTS, BY ERIC H. CLINE

THIS month, a report issued by a prominent military advisory board concluded that climate change posed a serious threat to America's national security.

The authors, 16 retired high-ranking officers, warned that droughts, rising seas and extreme weather events, among other environmental threats, were already causing global “instability and conflict.”

But Senator James M. Inhofe of Oklahoma, the ranking Republican on the Senate Armed Services Committee and a stalwart believer that global warming is a “hoax,” dismissed the report as a publicity stunt.

Perhaps the senator needs a history lesson, because climate change has been leading to global conflict — and even the collapse of civilizations — for more than 3,000 years. Drought and famine led to internal rebellions in some societies and the sacking of others, as people fleeing hardship at home became conquerors abroad.

One of the most vivid examples comes from around 1200 B.C. A centuries-long drought in the Aegean and Eastern Mediterranean regions, contributed to — if not caused — widespread famine, unrest and ultimately the destruction of many once prosperous cities, according to four recent studies.

The scientists determined the length and severity of the drought by examining ancient pollen as well as oxygen and carbon isotope data drawn from alluvial and mineral deposits. All of their conclusions are corroborated by correspondence, inscribed and fired on clay tablets, dating from that time.

Ancient letters from the Hittite kingdom, in what is now modern-day Turkey, beseech neighboring powers for shipments of grain to stave off famine caused by the drought. (The drought is thought to have affected much of what is now Greece, Israel, Lebanon and Syria for up to 300 years.) One letter, sent from a Hittite king, pleads for help: “It is a matter of life or death!”

Another letter, sent from the city of Emar, in what is now inland Syria, states simply, “If you do not quickly arrive here, we ourselves will die of hunger.” The kingdom of Egypt, as well as the city of Ugarit, on the coast of what is now Syria, responded with food and supplies, but it is not clear if they were able to provide enough relief.

It certainly created problems of national security for the great powers of the time. Correspondence between the Egyptians, Hittites, Canaanites, Cypriots, Minoans, Mycenaeans, Assyrians and Babylonians — effectively, the Group of 8 of the Late Bronze Age — includes warnings of attacks from enemy ships in the Mediterranean. The marauders are thought to have been the Sea Peoples, possibly from the western Mediterranean, who were probably fleeing their island homes because of the drought and famine and were moving across the Mediterranean as both refugees and conquerors.

One letter sent to Ugarit advised the king to “be on the lookout for the enemy and make yourself very strong!” The warning probably came too late, for another letter dating from the same time states: “When your messenger arrived, the army was humiliated and the city was sacked. Our food in the threshing floors was burned and the vineyards were also destroyed. Our city is sacked. May you know it! May you know it!”

While sea levels may not have been rising then, as they are now, changes in the water temperature may have been to blame for making life virtually unlivable in parts of the region.

A 2012 study published in the Journal of Archaeological Science found that the surface temperatures of the Mediterranean Sea cooled rapidly during this time, severely reducing precipitation over the coasts. The study concluded that agriculture would have suffered and that the conditions might have influenced the “population declines, urban abandonments and long-distance migrations associated with the period.”

To top it off, catastrophic events, in the form of a series of earthquakes, also rocked many ancient cities in these areas from around 1225 to 1175 B.C. These, together with the famines and droughts, would have further undermined the societies of the time, most likely leading to internal rebellions by the underclass and peasant populations who were facing severe food shortages, as well as invasions by migrating peoples.

We still do not know the specific details of the collapse at the end of the Late Bronze Age or how the cascade of events came to change society so drastically. But it is clear that climate change was one of the primary drivers, or stressors, leading to the societal breakdown.

The era that followed is known as the first Dark Ages, during which the thriving economy and cultures of the late second millennium B.C. suddenly ceased to exist. It took decades, and even hundreds of years in some areas, for the people in these regions to rebuild.

We live in a world that has more similarities to that of the Late Bronze Age than one might suspect, including, as the British archaeologist Susan Sherratt has put it, an “increasingly homogeneous yet uncontrollable global economy and culture” in which “political uncertainties on one side of the world can drastically affect the economies of regions thousands of miles away.”

But there is one important difference. The Late Bronze Age civilizations collapsed at the hands of Mother Nature. It remains to be seen if we will cause the collapse of our own.

Please visit the site: <http://www.nytimes.com/2014/05/28/opinion/climate-change-doomed-the-ancients.html>