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# Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

**- Σεπτέμβριος 2016 -**

**The seed of everything is in everything else.**

*(Anaxagoras 500 BC - 428 BC)*

## Newsletter of the Hellenic Society of Archaeometry

**- September 2016 -**

**Nr. 186**

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## **ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS**

### **22<sup>ο</sup> ΠΑΝΕΛΛΗΝΙΟ ΣΥΝΕΔΡΙΟ ΧΗΜΕΙΑΣ, 2-4 ΔΕΚΕΜΒΡΙΟΥ 2016, ΚΕ.Δ.Ε.Α. Α.Π.Θ., ΘΕΣΣΑΛΟΝΙΚΗ**

Αγαπητοί συνάδελφοι,

η Ε.Ε.Χ. διοργανώνει το 22<sup>ο</sup> Πανελλήνιο Συνέδριο Χημείας 2-4 Δεκεμβρίου 2016 στο ΚΕ.Δ.Ε.Α. του Α.Π.Θ. στη Θεσσαλονίκη.

Πληροφορίες για το Συνέδριο μπορείτε να αντλείτε από τον ιστότοπο του, <http://22psx2016.blogspot.gr/>

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## **GROUND STONE ARTIFACTS AND SOCIETY,** **12<sup>TH</sup>-15<sup>TH</sup> SEPTEMBER 2017, MAINZ,** **GERMANY**

An international conference on quarrying, production, function and exchange of ground stone artifacts

Johannes Gutenberg University of Mainz, University of Applied Sciences Mainz, Römisch-Germanisches Zentralmuseum

The Johannes Gutenberg University of Mainz, together with the University of Applied Sciences Mainz and supported by the Römisch-Germanisches Zentralmuseum, cordially invites you to participate in our international conference on Ground Stone Artifacts and Society, to be held at the University of Applied Sciences in Mainz (Germany) from September 12th to 15th, 2017.

We aim to provide a trans-disciplinary forum for researchers from various fields committed to the different aspects and research questions related to ground stone artifact studies.

Following the successful approach of the AGSTR founding meeting held in Haifa 2015, the conference is dedicated to a wide range of ground stone tools related topics. These include the social contexts of ground stone artifacts in different regions and cultures from prehistoric to historic times; quarries, quarrying technologies and quarrying tools; production techniques; micro/macro-wear and residue analyses, as well as other functional studies; trade and exchange systems and mechanisms; studies of bedrock features; ethnography of ground stone use. We intend to dedicate a session especially to quern and millstone studies.

Contributions are welcome addressing geochemical-mineralogical methods for raw material characterization, the creation of data backgrounds for provenance analyses, data treatment and evaluation (e.g. statistic approaches, GIS evaluations etc.).

Other topics and themes are also welcome. The subject areas and numbers of sessions will be determined when the deadline for sending abstracts is due and all abstracts are considered.

Organizing Committee:

- Tatjana M. Gluhak, Institut für Geowissenschaften, Johannes Gutenberg University Mainz

(gluhak@uni-mainz.de)

- Stefanie Wefers, i3 mainz, Hochschule Mainz (stefanie.wefers@hs-mainz.de) - Susanne Greiff, Römisch-Germanisches Zentralmuseum (mailto:greiff@uni-mainz.de)

Technical Information:

Duration and dates: 4 days, 12th – 15th September 2017.

Location: The workshop will take place in the University of Applied Sciences Mainz, Germany.

Oral contributions: Oral contributions will be 15 minutes, followed by 5 minutes discussion.

Poster presentation: Poster presentations are welcome.

Abstracts: Max. 300 words (including author's details and institutional affiliation).

Language: The official language for the conference is English.

Deadline for submitting abstracts: TBA.

Deadline for registration: TBA.

Workshop fees: TBA.

Accommodations: The conference will be held in the City Center of Mainz, where several reasonably priced (and others) hotels are located within walking distance (e.g. ibis Mainz City, Hotel Königshof, Mainzer Hof, Hof Ehrenfels, City Hotel Neubrunnenhof...). Mainz is quite frequented by tourists, so we recommend to book early.

Transportation to Mainz: Mainz is conveniently reached by train from the neighboring countries. Within 30 minutes it is reached by trains which run frequently from Frankfurt/Main Airport (FRA).

Field trip: To the pre- and early historic quarries in the Eifel region, on the 3rd day of the workshop.

Homepage: Forthcoming!

## **BANEA 2017 - CALL FOR SESSIONS/PAPERS,** **GLASGOW, 4-6 JANUARY 2017**

The British Association of Near Eastern Archaeology's next annual meeting will be held at the University of Glasgow from 4-6 January 2017.

The conference's theme is Grand Challenges and Blue Skies in the Study of the Ancient Near East. Plenary speaker is Prof. Susan Pollock (Freie Universität Berlin).

**Conference sessions include:**

Encounters with Materials and Technologies Routines, Memory and Performance, Landscapes of Transition, Archaeologies in and of Conflict, Big Data, Large Scales, Long-term - New Approaches, Ongoing Fieldwork, Posters.

Visit <http://www.banea2017.org> for session abstracts.

**Deadlines:**

Session/workshop proposals: 15 September 2016 Paper abstracts: 31 October 2016

For enquiries contact: <mailto:info@banea2017.org>.

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**DISCOVERING COLLECTIONS,**  
**DISCOVERING COMMUNITIES 2016: NEW**  
**KEYNOTE ANNOUNCEMENT, 10TH-12TH**  
**OCTOBER 2016, THE LOWRY, PIER 8,**  
**SALFORD QUAYS, MANCHESTER, M50 3AZ**

**What:** Collections, connections, collaborations: From potential to impact.

**When:** 10th-12th October 2016

**Where:** The Lowry, Pier 8, Salford Quays, Manchester, M50 3AZ

**Cost:** from £30 (please note booking fees apply).

**Full programme:** <http://dcdcconference.com/dcdc16-programme/>

**Registration:** <https://www.eventbrite.co.uk/e/dcdc16-collections-connections-collaborations-from-potential-to-impact-tickets-25978450244>

Research Libraries UK and The National Archives are delighted to announce that Phil Lyons, CEO of the National Holocaust Centre, will be delivering a keynote at DCDC16 on [The Forever Project](#), an ambitious 3D interactive programme that will preserve the voice of Holocaust survivors for generations to come.

Phil joins our other keynote speakers:

- [Nicola Wright](#) (Director of LSE Library Services)
- [Professor Carenza Lewis](#) (Professor for the Public Understanding of Research, University of Lincoln).

For a full programme of all the exciting panels and workshop on offer please follow the link above.

So please do come and join the 250 speakers and delegates already signed up for this year's DCDC conference at The Lowry, Salford Quays, to discuss and explore the varied and innovative ways in which archives, museums, libraries, and academia can work together to help realise the potential of collections. We would love to see you there!

See the conference video at: <https://www.youtube.com/watch?v=DN7XbBQCmyU>

The pre-conference drinks reception offers an excellent opportunity to meet your fellow delegates and network over a glass of wine and and supper, while the conference meal on the Tuesday night will be held in the stunning surroundings of the IWM North.

For further details please contact [Melanie.cheung@rluk.ac.uk](mailto:Melanie.cheung@rluk.ac.uk) or [Laura.Tompkins@nationalarchives.gsi.gov.uk](mailto:Laura.Tompkins@nationalarchives.gsi.gov.uk)

**Dr Laura Tompkins | Academic Engagement Manager |**  
The National Archives, Kew, Richmond, Surrey TW9 4DU  
[Sign up for our research newsletter](#)

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**GLASS REFLECTIONS: CREATION AND  
TRANSFORMATION OF GLASS IN EASTERN  
MEDITERRANEAN, SATURDAY 17TH OF  
SEPTEMBER 2016, UNIVERSITY OF  
NOTTINGHAM, HUMANITIES BUILDING**

Dear colleagues,

I would like to draw your attention to a forthcoming International Workshop on the Archaeology of Glass entitled:

**“Glass Reflections: Creation and Transformation of Glass in Eastern Mediterranean”**

The production and trade of glass is a focus of current research in glass studies, developing from archaeological and scientific evidence.

This workshop will address key issues regarding to technological aspects and distribution of glass in the transition period from Late Bronze Age to the 1st Millennium BC. Scope of the workshop is to provide an international forum to exchange relevant up to date archaeological and analytical data. The workshop is aimed at solving key issues relating to archaeology and archaeological technology, provenance and recycling issues, change of glass technology and production methods. Furthermore special attention will be drawn at the political, social and economic change on glass production and distribution of the 1st Millennium BC.

The workshop will take place at the University of Nottingham, Humanities Building, on **Saturday 17th of September 2016**, from 10.00 am till 18.00 pm.

On behalf of the Organizing Committee, I would be pleased to invite you to attend the workshop and register at <http://glassreflections.co.uk/registration/> till 10th of September.

The registration fee is 20£ and includes access to the lectures and to the coffee and lunch breaks.

Please find attached the program of the workshop and further information can be sought at [www.glassreflections.co.uk](http://www.glassreflections.co.uk)

On behalf of the organising committee.

Kind regards,  
Artemios Oikonomou

**Organising Committee:**  
Prof Julian Henderson  
Dr Artemios Oikonomou

**Information:**  
[www.glassreflections.co.uk](http://www.glassreflections.co.uk)

**Registration:**  
<http://glassreflections.co.uk/registration/>

**Contact:**  
[artemios.oikonomou@nottingham.ac.uk](mailto:artemios.oikonomou@nottingham.ac.uk)

PROGRAM

Saturday 17 September, 2016		University of Nottingham
09.00-09.50	Registration	
09.50-10.00	Welcoming remarks Oikonomou A. and Henderson J.	
10.00-10.20	Production and provenance of Iron Age glass from Pieria, Greece Blomme A., Degryse P., <b><u>Dotsika E.</u></b> , Ignatiadou D., Longinelli A. and Silvestri A.	
10.20-10.40	A synthetic study of the technology and provenance of Hellenistic glass from Epirus, Greece <b><u>Oikonomou A.</u></b>	
10.40-11.00	Compositional Analysis of Hellenistic and Roman glass from Eastern Thessaly (Greece) <b><u>Smirniou M.</u></b> , Gratuze B. and Asderaki E.	
11.00-11.20	Technology and Use of Glass during the Classical Times: A Case Study of Glass Knucklebones <b><u>Zacharias N.</u></b>	
11.20-12.00	Coffee break	
12.00-12.20	Tradition and innovation: making glass inlays in Ptolemaic Egypt <b><u>Boschetti Cr.</u></b>	
12.20-12.40	Late Hellenistic and early Roman slumped and cast glass vessels from the House of Orpheus at Nea Paphos, Cyprus. An Interim Report. <b><u>Cosyns P.</u></b> , Ceglia A., Oikonomou A. and Michaelides D.	
12.40-13.00	Glass Grenades from the Medieval Castle in Mytilene, Lesbos <b><u>Triantafyllidis P.</u></b>	
13.00-15.00	Lunch break	
15.00-15.20	Early Roman Glass Tablewares. Innovation and Replication <b><u>Price J.</u></b>	
15.20-15.40	Roman glasses and raw materials <b><u>Jackson C.M.</u></b> and Paynter S.	
15.40-16.00	Big Data for Small Details: Glass Recycling in the First Millennium AD <b><u>Duckworth Ch.</u></b>	
16.00-16.30	Coffee Break	
16.30-17.30	Is Hittite glass the earliest in western Asia? <b><u>Henderson J.</u></b>	

**THE AEGEAN AND THE LEVANT AT THE  
TURN OF THE BRONZE AND IRON AGE, 27<sup>TH</sup>  
SEPTEMBER 2016, UNIVERSITY OF  
WARSAW, INSTITUTE OF HISTORY,  
KRAKOWSKIE PRZEDMIEŚCIE 26/28, ROOM  
108, (NEW BUILDING OF THE FACULTY OF  
HISTORY)**

9:30 Opening Greetings 9:45-10:30 Aren Maeir (Bar-Ilan University), The Philistines: 'Things ain't what they used to be'

10:30-11:30

Rostislav Oreshko (University of Warsaw), Ahhiyawa - Danu(na) - Palasti(na). Aegean Ethnics in the Eastern Mediterranean in the Light of Old and New Hieroglyphic-Luwian Evidence Zsolt Simon, (Ludwig-Maximilians-Universität München), What do we really know about the Philistine language?

Discussion

Coffee (11:45-12:15)

12:15-13:00

Ayelet Gilboa (University of Haifa), Foci of Levantine Maritime Trade across the Late Bronze/Iron Age Transition: Sea People, Phoenicians and other Problematic Entities 13:00-14:00 Jeffrey P. Emanuel, (Harvard University), Warfare or Piracy? Describing and defining naval combat in the Late Bronze-Early Iron Aegean and Eastern Mediterranean Stefan Yordanov, (Veliko Tarnovo University Sts Cyril and Methodius), Potestary political cultures in change in the times of change: Interactions in Aegean Region and Eastern Mediterranean at the end of the Bronze Age and the beginning of the Iron Age Discussion

Lunch (14:15-15:15)

15:15-16:00

Alexander Fantalkin (Tel Aviv University), The Goddess of Ekron in the context of Philistine Migration in the Early Iron Age 16:00-17:00 Alexander V. Safronov, (Russian Academy of Sciences, Moscow), The letter RS 88.2158 and Egyptian-Ugaritic relations under Sethos II Mariacarmela Montesanto (University of Liverpool), Aegeans in the Northern Levant? A view from Alalakh Discussion

Coffee (17:15-17:45)

17:45-18:30

Jan Paul Crielaard (VU University Amsterdam), Hybrid go-betweens: the role of individuals with multiple identities in cross-cultural contacts in the Late Bronze Age and Iron Age Mediterranean

18:30-19:15

Irad Malkin (Tel Aviv University)

Greek women and Greek colonies in the Archaic period

28TH SEPTEMBER 2016, UNIVERSITY OF WARSAW 9:00-11:00 Vicky Vlachou, (Université libre de Bruxelles - CReA-Patrimoine), New Images, Old Practices? An Imagery of Funerary Rituals and Cult between the Aegean and the Eastern Mediterranean.

Laszlo Vilmos, (University of Pécs), Pride and prejudice / Piracy and exchange of goods – warriors and craftsmen Rik Vaessen (independent scholar), An Ionian perspective on Aegeo-Levantine interactions at the end of the second millennium BCE Sarah C. Murray, (University of Nebraska-Lincoln), Imported Objects in the Aegean as Evidence of Elite Interaction: A Flawed Paradigm?

Discussion

Coffee (11:15-11:45)

11:45-12:30

Gunnel Ekroth (Uppsala Universitet), Burn, burn, burn... When, why and how the ancient Greeks performed holocaustic sacrifices

12:30-13:30

Olga A. Zolotnikova, (University of Athens / Hellenic Open University), Elements of the Syro-Phoenician epic / mythic traditions in the Homeric concept of Zeus Lech Trzcionkowski (The Jagiellonian University), Tradition and Innovation in the Greek Sacrificial Ritual: Epics and the Prehistory of Ritual in the East Mediterranean Context  
Discussion

Lunch (13:45-14:45)

14:45-15:30

Ian Rutherford (University of Reading), Mons Kasios and Early Greek Mythology 15:30-17:00 Ismail Gezgin (Ege University, Izmir), The Making of Ionian Identity in Asia Minor Jesse Michael Millek (The University of Tübingen), Destruction and the Cessation of Trade between the Aegean and the Levant at the End of the Late Bronze Age Francisco Jesús Núñez Calvo (Independent Scholar) The impact of the Sea Peoples in Central Levant. A revision.

17:00 Closing remarks and discussion

The full program can be downloaded here: <http://starozytnyizrael.pl/wp-content/uploads/2016/08/Program.27-28.09.2016-final-version.pdf>

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## **LSC CONFERENCE, 1-5 MAY 2017,** **COPENHAGEN**

Dear Colleagues,

As you might already know that the next LSC conference will be hold in 1-5 May 2017 in Copenhagen. Here I could like to send you the second announcement with practical information of the conference including abstract submission and registration.

The conference is now open for abstract submission, registration and hotel booking. All papers related to the topic of the LSC2017 conference are welcome. Please register and submit your abstract in the website of the conference (<http://lsc2017.nutech.dtu.dk>), you can find the updated information in the website.

Please feel free to distribute the announcement and this email to the colleagues who might be interested in this conference.

Prof. Xiaolin Hou

On behalf of the organization committee

LSC2017, Advances in Liquid Scintillation Spectrometry  
Copenhagen, 1-5 May, 2017  
Website: <http://lsc2017.nutech.dtu.dk>

### Important Dates:

- Call for paper: 15th Aug. 2016
- Registration starts : 15th Aug. 2016
- Deadline for abstract submission: 15th Nov. 2016
- Notification for presentation: 1st Feb. 2017
- Deadline for early-bird registration: 15th Feb. 2017
- Program of the conference: 15th Mar.2017
- Deadline for full paper submission: 1st June 2017

### Sessions:

- New development on LSC instrumentation, methodology and scintillators (Chair: Philippe Cassette)
- Radionuclide metrology using LSC (Chair: Karsten Kossert)
- Calibration, standardization and quality assurance (Chair: Brian E. Zimmerman)
- Data evaluation and spectrum analysis (Chair: Jean Aupiais)
- Applications in environmental radioactivity (Chair: Aurelien Pitois and Gabriele Wallner)
- LSC in nuclear chemistry (decommissioning, waste processing, nuclear materials) (Chair: Nora Vajda and Phil E. Warwick)
- Applications in bioscience, medicine and drug studies (Chair: Mikael Jensen)
- Applications in natural radionuclides measurement, chronology and geology (Chair: Siegurd Möbius)
- LSC in neutrino and neutron detection (Chair: Xiongxin Dai)

- Plastic scintillator and applications (Chair: Jose F. Garcia and Alex Tarancon)
- Applications in tritium studies (Chair: Nicolas Baglan)
- Applications based on alpha/beta spectrometry (Chair: Xiaolin Hou)

\*\*\*\*\*

Xiaolin Hou  
Professor of Radiochemistry  
Chairman of LSC2017 conference  
Technical University of Denmark (DTU)  
Center for Nuclear Technologies (Nutech)  
LSC2017

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

**2016-2017 HARRIET BOYD HAWES**  
**FELLOWSHIP APPLICATION GUIDELINES,**  
**INSTAP STUDY CENTER FOR EAST CRETE,**  
**PACHEIA AMMOS, CRETE, 72200 GREECE**

+30-28420-93027, [www.instapstudycenter.net](http://www.instapstudycenter.net)

The INSTAP Study Center for East Crete is pleased to announce the availability of two fellowships to be awarded on a competitive basis to an eligible candidate for work to be done at the Study Center in Pacheia Ammos, Crete in 2016–2017. These fellowships are aimed at the investigation of the role of women or gender studies in Bronze Age Crete. They are intended to highlight spheres and aspects of ancient life that have not yet received sufficient attention in Aegean Bronze Age studies. The fellowships are intended for scholars in the field of the Aegean Bronze Age/Early Iron Age who have completed their PhD Dissertations. The fellowship will be awarded in the amount of \$3,000. Applications must be received by e-mail no later than **October 14, 2016**. Please send your applications and required information as attachments to: [elizabethshank@hotmail.com](mailto:elizabethshank@hotmail.com).

In addition to the completed application form, proposals should include a *curriculum vitae* of the applicant, a page summarizing the title and intent of the project, an outline of the intended project, relevant bibliography, copies of appropriate permits, and two letters of support for the project by two colleagues. The fellowships are open to those holding a PhD in Archaeology, Anthropology, Art History, Ancient History, or Classics. The recipient must be prepared to present an overview of his or her work and findings in the KENTRO Newsletter and/or a public lecture at the INSTAP Study Center for East Crete. The research should be carried out on Crete, and the grant includes membership fees to the INSTAP Study Center. Desirable methods of inquiry include:

- o Ethnography/experimental archaeology
- o Exploration of written archives and collections from various periods
- o Library research
- o Examination of archaeological materials, including artifacts, bones, and other organic remains

These fellowships are intended to provide supplementary income for researchers who are either exploring new fields of study or finishing extended research. The amount of each award is US \$3,000, which can be applied to travel or living expenses, but should not be used as salary or for the purchase of equipment (e.g., cameras or computers). The primary aim of the funding is to stimulate new forms of research, which will broaden the scope of Minoan studies.

Consideration for the fellowships is open to all candidates meeting the stated requirements. Awards are made irrespective of race, gender, religion, national origin, age, disability, marital status, sexual orientation, and actual or perceived medical conditions. It is possible that in the absence of qualified candidates with appropriate projects, a fellowship will not be awarded.

**INSTAP Study Center for East Crete  
2016–2017 HARRIET BOYD HAWES FELLOWSHIP**

**Cover Sheet**

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Name of Applicant

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Title of Project

**INSTAP Study Center for East Crete  
2016–2017 HARRIET BOYD HAWES FELLOWSHIP**

**Application Form**

1. Full name of applicant: Social Security Number:
2. Title of Project:
3. Present Address: Telephone: Fax:
- E-mail:
4. Institution:
5. Citizenship:
6. Please list any publications by the applicant:
7. Please list any other fellowship applications for 2016-2017:

Date to receive funding:

Method of payment: \_\_\_ A check in US dollars \_\_\_ A check in Euros \_\_\_ Wire transfer

If you are requesting a check, where would you like your check to be sent?

If awarded the INSTAP Study Center for East Crete Harriet Boyd Hawes 2016–2017 Fellowship, I agree to abide by the terms of the award, including the submission of a final report detailing the work completed and a financial accounting by January 31, 2018.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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## **LECTURER / SENIOR LECTURER GLASGOW** **UNIVERSITY – SUERC**

Full time, salary range £41,255 - £47,801 / £49,230 - £55,389 per annum

This is a dual role (1) to lead the Natural Environment Research Council (NERC) Radiocarbon Facility-East Kilbride Node (NRCF-EK) and (2) to pursue a world-class research programme in radiocarbon and carbon-cycle science. Additionally, the successful candidate will contribute to teaching and supervision at undergraduate and/or postgraduate level.

For further details and how to apply:

<http://www.gla.ac.uk/about/jobs/vacancies/> Reference 014194

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## **ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS**

### **ΝΕΟΙ ΔΙΔΑΚΤΟΡΕΣ ΣΤΗΝ ΑΡΧΑΙΟΜΕΤΡΙΑ**

Αγαπητοί Συνάδελφοι,

Σας πληροφορούμε, με χαρά μας, ότι πρόσφατα ολοκληρώθηκαν και υποστηρίχθηκαν με επιτυχία τρεις διδακτορικές διατριβές ισάριθμων νέων επιστημόνων - μελών της Ομάδας μας (Μελέτης Αρχαίων Μετάλλων και Παλαιοπεριβάλλοντος, όπου και εκπονήθηκαν), με τα εξής αντικείμενα:

1. "Environmental reconstruction of coastal deposits on southern Cyprus by using luminescence techniques", στις 22 Ιουλίου 2016, από τον Ευάγγελο Τσάκαλο, M.Sc. Environmental Scientist, τ. υπότροφο NARNIA/M. Curie, στο Τμήμα Γεωλογίας του Πανεπιστήμιο Πατρών (Κύριος Επιβλέπων Καθηγ. Γ. Παπαθεοδώρου).
2. "Διερεύνηση και εφαρμογή των χρονολογικών τεχνικών της φωταύγειας στη γεωχρονολόγηση των παράκτιων τεταρτογενών σχηματισμών του Ευβοϊκού Κόλπου" στις 21 Ιουλίου 2016 από την Μαρία Καζαντζάκη, Διπλ. Μηχ/κό Μεταλλείων-Μεταλλουργό Ε.Μ.Π., τ. υπότροφο Ε.Μ.Π., στη Σχολή Μεταλλειολόγων Μηχανικών του Ε.Μ.Π. (Κύρια Επιβλέπουσα Καθηγ. Θ. Ροντογιάννη).
3. "Χρωστικές κονίες και άλλα υλικά μεταβυζαντινής ζωγραφικής", στις 19 Απριλίου 2016, από τον Γεώργιο Μαστροθεόδωρο (ΜΔΕ Συντηρητή Αρχαιοτήτων, τ. Υπότροφο Ιδρ. Ωνάση), στο Τμ. Μηχανικών Επιστήμης Υλικών του Πανεπιστημίου Ιωαννίνων (Κύριος Επιβλέπων Καθηγ. Κ. Μπέλτσιος).

Τα κείμενα των διατριβών καθώς και σχετικές δημοσιεύσεις είναι άμεσα διαθέσιμα σε ηλεκτρονική μορφή pdf, εφόσον ζητηθούν από ενδιαφερόμενους.

Με εκτίμηση,

Ιωάννης Μπασιάκος

\*\*\*\*\*  
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<http://inn.demokritos.gr/en/prosopiko/y.bassiakos/>  
Editor-in-Chief, J. Archaeological and Anthropological Sciences (by Springer)  
<http://www.springer.com/earth+sciences+and+geography/journal/12520?detailsPage=editorialBoard>

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## **ST. MARY'S UNIVERSITY DIGITAL ARCHAEOLOGIST GETS \$325,000 TO RECOVER LOST ANCIENT TEXT**

Jubilees Palimpsest Project uses new technology to explore old manuscripts

<http://bit.ly/2b0d5Vf>, is like Indiana Jones, only his quests happen within centuries-old artifacts instead of in pursuit of them.

St. Mary's University was awarded a \$325,000 grant this week from the National Endowment for the Humanities to fund the Associate Professor of Theology's work revealing hidden words within biblical literature. It's called the <http://palimpsest.stmarytx.edu/>.

Hanneken is the first scholar to use <http://palimpsest.stmarytx.edu/webri/integratingsynopsis.html> (Reflectance Transformation Imaging) to excavate text from ancient books and manuscripts. These artifacts, called palimpsests, haven't been legible for centuries - because they were erased.

Long ago, paper was hard to come by, so writing often was erased from valuable parchment so it could be reused. What was viewed as heresy often was deleted. For example, the Book of Jubilees was written in Hebrew in the 150s B.C. and was authoritative among the Dead Sea Scrolls, but it was cast aside by Judaism and Christianity, Hanneken said. There is much society can learn from restoring this lost literature.

"This grant will expand opportunities for our students to work at the forefront of innovations in the study of ancient Judaism and Christianity," Hanneken said. "I fully expect this grant project - and other projects using the technology we are developing - will lead to deeper understanding of the historical foundations of Christianity."

<https://www.stmarytx.edu/2014/ancient-manuscripts/> Spectral imaging uses ultraviolet and infrared wavelengths to reveal colors the human eye can't detect, and RTI picks up the corrosion of parchment where acidic ink once had been. Combine the two technologies and - voila! - what once was lost now is found. We were blind, but now we see.

"Suddenly the tens of thousands of palimpsests already in libraries and museums are like caves in the desert with lost texts just below the surface," Hanneken said.

Hanneken invented the technology at St. Mary's in 2012 and now coordinates a team of 21 archaeologists, theology scholars and imaging experts from institutions around the U.S. Student researchers from St. Mary's assist with the project, which is also sponsored by the Edward and Linda Speed Endowment for Faculty Development and Research.

The team focuses on the <http://bit.ly/1yvx5Zj>, a fifth-century erased Latin manuscript containing ancient books excluded from the Bible:

\* The Book of Jubilees, originally written in the second century B.C., is Moses' retelling of Genesis and Exodus as a legal narrative. It further describes creation and descendants of Adam and Eve.

\* The Testament of Moses is a Jewish text from around the time of Jesus that describes a messianic figure other than Jesus.

\* The Arian Commentary on the Gospel of Luke, written in the fourth century A.D., reflects the ideas of the followers of Arius, who were deemed heretics because they considered God the Son to be subordinate to God the Father.

Each was erased and an anthology of the writings of Augustine was written on the parchment. The palimpsest itself has been at the Biblioteca Ambrosiana in Milan since the 17th century.

The grant allows St. Mary's faculty and students, as well as colleagues from the Early Manuscripts Electronic Library and the Rochester Institute of Technology, to visit Milan to analyze this palimpsest. Interactive images will be published online for public use, with research led by scholars from St. Mary's, the University of Notre Dame and the University of Pennsylvania. Grant funds also allow St. Mary's faculty and students to teach other scholars and curators to use the technology in the future.

Funding is still being sought for the next steps in the project, which include a multi-institution effort to create a permanent center for digital archaeology.

The project supports the mission of St. Mary's University in leading internationally recognized scholarly excellence in the study of the Catholic intellectual tradition. The grant extends opportunities to St. Mary's students to work alongside leading experts in building the tools that will help define the future of digital humanities research.

About the National Endowment for the Humanities

Created in 1965 as an independent federal agency, the <http://www.neh.gov/humanities/2015/julyaugust/curio/pair-technologies-sheds-new-light-jubilees-palimpsest> supports research and learning in history, literature, philosophy, and other areas of the humanities by funding selected, peer-reviewed proposals from around the nation. Additional information about the National Endowment for the Humanities and its grant programs is available at <http://www.neh.gov>.

"NEH provides support for projects across America that preserve our heritage, promote scholarly discoveries, and make the best of America's humanities ideas available to all Americans," NEH Chairman William D. Adams said. "We are proud to announce this latest group of grantees who, through their projects and research, will bring valuable lessons of history and culture to Americans."

St. Mary's University, founded in 1852, is the first institution of higher learning in San Antonio and the oldest Catholic university in the Southwest. It offers 75 programs, including doctoral and law programs, and has a diverse student population of about 3,800 of all faiths and backgrounds. Its vision, as a Catholic and Marianist liberal arts

institution, is to become one of the finest private universities in the region, a gateway for graduates to professional lives as ethical leaders in Texas, the nation and the world.

Please visit the site: <https://www.stmarytx.edu/2016/digital-archaeologist-grant/>

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## ***ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS***

### **UNIVERSITY OF OXFORD, 17 AUG 2016, 'CLOCKS' IN TREE-RINGS THAT COULD RESET CHRONOLOGIES ACROSS THE ANCIENT WORLD**

Oxford University researchers say that trees which grew during intense radiation bursts in the past have 'time-markers' in their tree-rings that could help archaeologists date events from thousands of years ago. In a new paper, the authors explain how harvesting such data could revolutionise the study of ancient civilisations such as the Egyptian and Mayan worlds.

Until now scholars have had only vague evidence for dating when events happened during the earliest periods of civilisation, with estimates being within hundreds of years. However, the unusually high levels of the radioactive isotope carbon-14 found in tree-rings laid down during the radiation bursts could help reliably pinpoint dates. The distinct spikes act as time-markers like secret clocks contained in timber, papyri, baskets made from living plants or other organic materials, says the paper published in the Royal Society Journal Proceedings A.

Oxford University researchers say that trees which grew during intense radiation bursts in the past have 'time-markers' in their tree-rings that could help archaeologists date events from thousands of years ago. In a new paper, the authors explain how harvesting such data could revolutionise the study of ancient civilisations such as the Egyptian and Mayan worlds. Until now scholars have had only vague evidence for dating when events happened during the earliest periods of civilisation, with estimates being within hundreds of years. However, the unusually high levels of the radioactive isotope carbon-14 found in tree-rings laid down during the radiation bursts could help reliably pinpoint dates.

Scholars believe that intense solar storms caused major bursts of radiation to strike the Earth in 775 and 994AD, which resulted in distinct spikes in the concentration of radiocarbon in trees growing at that time. The events are precisely datable because the tree-rings belong to archives in which the growth year of each tree-ring is exactly known. In the new research, the authors outline how they could detect similar spikes elsewhere within the thousands of years of available tree-ring material from across the world. They say even a handful of these time-markers could allow them to piece together a reliable dating framework for important civilisations. The crucial point is that the time-markers will also be present in every living plant or tree that grew at the time of a radiation surge, including in the timber used in ancient buildings or other artefacts fashioned from the plants. The paper suggests that the existing tree-ring data are likely to reveal other radiocarbon surges in particular years. The problem, however, is that the tree-ring data is only available in blocks of decades rather than year by year. The new paper proposes a cutting-edge mathematical method to filter out particular years within such a block when 'change points' in radiocarbon levels occurred. It also adds that it is currently unclear how regularly the Earth has been hit by such intense bursts of radiation, and what the precise



magnitude of the events might have been so finding new spikes will also help us understand past solar activity.

Currently, archaeologists have to rely on relatively sparse evidence for dating the history of Western civilisation before 763 BCE, with Chinese history also only widely agreed from 841 BCE. For example, they depend on ancient records of rare astronomical phenomena, such as the solar eclipse during the ninth year of Ashur Dan III of Assyria, to determine the age of historical events. In the absence of such records, standard radiocarbon measurements provide the best estimates, but these are still often only accurate to within 200 to 300 calendar years. If the radiocarbon spikes in the tree-ring data were also found in archaeological items attributable to specific historical periods, the information could be used to anchor exactly when events occurred, says the paper.

Lead author Dr Michael Dee, from the School of Archaeology at the University of Oxford, said: 'Variations in atmospheric radiocarbon concentration are largely the result of carbon dioxide emissions from activity from volcanoes and the ocean, but they are also influenced by changes in solar activity. The spikes in 775 and 994AD were almost vertical and of comparable magnitude all around the Earth. Such markers can be easily identified in known-age tree-rings and are fixed in time. In the past, we have had floating estimates of when things may have happened, but these secret clocks could reset chronologies concerning important world civilisations with the potential to date events that happened many thousands of years ago to the exact year.'

The paper, 'Anchoring historical sequences using a new source of astro-chronological tie-points', is published in the journal, Proceedings of the Royal Society A. <http://rspa.royalsocietypublishing.org/content/472/2192/20160263>

**Please visit the site: <http://www.ox.ac.uk/news/2016-08-17-clocks-tree-rings-could-reset-chronologies-across-ancient-world>**

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# **MARITIME TRANSPORT CONTAINERS IN THE BRONZE–IRON AGE AEGEAN AND EASTERN MEDITERRANEAN STUDIES IN MEDITERRANEAN ARCHAEOLOGY AND LITERATURE**

Stella Demesticha and A. Bernard Knapp (eds) *Maritime Transport Containers in the Bronze–Iron Age Aegean and Eastern Mediterranean Studies in Mediterranean Archaeology and Literature* PB 183 Uppsala, Sweden: Åströms förlag, 2016

Hardcover: pp. 252

ISBN13: 978-91-7081-211-8

60.00 EUR

## Description:

The maritime transport of goods in bulk provides a clear indicator of many facets of trade, from trade networks and merchants to individual economic transactions. One of the key material factors involved is what we term the Maritime Transport Container (MTC), examples of which include the Canaanite jar, Transport Stirrup jar and Phoenician amphora, more generally transport amphora. Although studied systematically during later periods, the early phases in the development of MTCs are relatively obscure, because their maritime function and attributes are often overlooked. This volume provides an overview of these early stages—from the Early Bronze to Early Iron Ages in the Aegean, on Cyprus and in the Levant—in the emergence and development of MTCs, and their diverse roles in trade throughout the Aegean and eastern Mediterranean. By reconstructing the early phases of their production and use, we gain important insights into the initial phases of seaborne trade in the Mediterranean, and can see how maritime transport containers serve as markers of trade mechanisms of different scale, or of economies that more or less depended on seaborne trade.

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Please visit the site: <http://www.astromeditations.com/books/book/?artno=PB183>

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## **EΙΔΗΣΕΙΣ - NEWS RELEASE**

### **BRUSHING OFF SANDS OF TIME AT THE ARCHAEOLOGICAL SITE OF SARUQ AL- HADID, BY JONATHAN GORNALL**

Since its first chance sighting from the air in 2002, the archaeological site of Saruq al-Hadid, lost for thousands of years in the desert dunes about 60 kilometres south of the Burj Khalifa, has yielded a treasure trove of 12,000 finds, 3,000 of which were unearthed in the past year.

But despite this wealth of evidence, one word dominated proceedings as archaeologists gathered in London at the weekend to present their latest findings from Saruq al-Hadid at the annual seminar organised by the British Foundation for the Study of Arabia: mystery.

What is known is that from about 5,000 year ago, peaking during the Iron Age about 3,000 years ago but active all the way through to almost the early Islamic period, this remote desert site was an important centre of metalworking activity, where skilled craftsmen produced objects in bronze, iron and gold in such numbers that it can only have been for trade with the wider region.

It was the tell-tale ore, scattered around on the dunes and staining the sands, that first drew the attention of Sheikh Mohammed bin Rashid, the Ruler of Dubai, as he flew over the site in a helicopter 14 years ago. Many of the objects subsequently found at Saruq Al-Hadid can be found in the dedicated museum in Dubai's historic Shindagha district. One, an elaborate gold ring, has inspired the design of the symbol for Dubai's Expo 2020.

"There is no doubt that it is a really important site," said Derek Kennet, senior lecturer in Durham University's department of archaeology.

But what we still don't know is why it was situated where it was. About 40 kilometres inland from the present day port of Jebel Ali, it was hardly conveniently placed for the export of goods by sea, or for access to the precious copper ore in the distant mountains of Oman.

"There's no immediately obvious reason why you would have a lot of human activity in a location like that," said Dr Kennet, chairman of the seminar's organising committee. "But there was clearly a lot of metalworking out there, mainly copper, but also gold."

To smelt metal you need three ingredients: fuel, ore and water, and none is available at Saruq al-Hadid. Archaeologists believe there may have been a water supply during the site's heyday - a lake, or seasonal surface water - while hardy ghaf trees, perhaps once abundant there, could have provided the fuel. The heavy ore, though, would have to have been carried from the distant mountains for many days on the backs of pack animals.

Long-forgotten politics could explain the remoteness of the site, which is unusual in that it was occupied for a very long period of time. "It may have been located out there to

avoid controls by the powers-that-be in the more populated areas," said Dr Kennet. Alternatively, the location - and indeed, the many finds of apparently ritualistic metal snakes - may have been linked to superstitions or religious beliefs.

The bronze snakes found at the site, also thought to have been made there, are one of the many mysteries of Saruq al-Hadid. In smaller numbers, these have been found elsewhere in the UAE and Oman, but Saruq al-Hadid was either the main centre for production or, perhaps in addition, had some significance to what archaeologists believe may have been a snake cult in the region.

Likewise, small metal human figurines have been found - toys, or charms, perhaps - alongside everyday but nonetheless spectacular finds such as swords, daggers, metal bowls and thousands of bronze arrow heads. Another mystery is a single anklet found at the site, possibly fashioned to fit a camel but possibly forged to hold a human leg.

One of the challenges of the site, which has drawn the attention of archaeologists from around the world, is that almost every find poses more questions than it answers. But, thanks to the unique properties of the site, which because of its remoteness has been protected from interference for centuries, archaeologists are amassing "an archaeological record which tells us a lot about the development of human civilisation more generally", said Dr Kennet.

Ironically, it is the current state of human civilisation in the wider Middle East that has led to what he says is the current "golden age" for archaeology in Oman and the UAE, an age in which Saruq Al-Hadid is emerging as one of the jewels in the crown.

In all, says Dr Kennet, there are now "something in the order of 25 foreign teams working in Oman and the UAE every year now, a massive increase over what they had a few years ago". The reason, he says, is the instability in traditional archaeological destinations such as Iraq, Syria and Iran, combined with the openness of Oman and the UAE to foreign collaboration. As a result, archaeologically "we are beginning to realise there was much more going on across this region than had been realised".

Many of yesterday's sessions at the two-day seminar, held in the British Museum, were dedicated to discussions and presentations about finds in the region, from Saruq al-Hadid to the discovery of a new Iron Age ritual complex in Central Oman and the latest findings from Tell Abraq, the ancient city on the border between present-day Sharjah and Umm Al-Qaiwan. There, evidence has been found of imports from Mesopotamia of bitumen, used more than 2,000 years ago to waterproof the hulls of ships trading up and down the Gulf.

There was, said Dr Kennet, much more to be learnt about the past in the region and its contribution to the development of civilisation in Mesopotamia, but he sounded a warning.

For one thing, rapid economic development, especially in the UAE, meant time was running out for the past: "We are seeing the archaeological landscape being steadily transformed by development, and in 20 or 30 years it will be much more difficult for archaeologists to work in the area."

It was, he said, also now "vital that Oman and the UAE now do more to develop their own archaeological expertise. Most of the archaeology in the region to date has been done by westerners, especially in the UAE.

"But as global financial circumstances in the world change, western missions may not find it so easy to come and work in the region and increasingly the locals are going to have to deal with their own archaeological heritage themselves."

**Please visit the site: <http://www.thenational.ae/uae/heritage/brushing-off-sands-of-time-at-the-archaeological-site-of-saruq-al-hadid#full> The National**

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## **POLES HAVE SOLVED THE RIDDLE OF DEFENSIVE STRUCTURES OF THE MIDDLE NILE**

Almost one hundred monumental defensive structures built between the fourth and sixth centuries over approx. 500 km from today's south of Egypt to the central Sudan. Polish archaeologists have just discovered some of their functions.

"Archaeological landscape of Egypt is dominated by the pyramids, and Sudan - by stone defensive structures from the time just before - and just after the Christianisation of pagan kingdoms in the mid-sixth century. They are literally all over the whole valley of the Middle Nile" - said in an interview with PAP head of Nubiology, Institute of Mediterranean and Oriental Cultures PAS, Prof. Bogdan Żurawski.

Some of the ramparts were several meters high and several meters wide. Depending on the place, they were made of stones or mud bricks, sometimes combining both techniques. All blocks were bonded with mud mortar. Walls covered an area of several hectares. "The scale is unbelievable" - said Prof. Żurawski.

As part of the subsidy granted by the Foundation for Polish Science in the MASTER programme Prof. Żurawski with a two-member team deals with this issue in the context of the formation of the Christian kingdoms in the valley of the Middle Nile in the IV-VI centuries. "After last research season, we are certain that the majority of the fortresses our team studied originally served as refuges, which means that in times of unrest local population would find refuge behind the huge walls and wait out the danger" - said Prof. Żurawski. He added that in times of peace, people lived in villages along the Nile, close to the fields.

Breakthrough was the research in Selib, a rectangular walled structure with a church and a well in the middle. The work is carried out on the basis of a concession granted to the Polish Centre of Mediterranean Archaeology of the University of Warsaw. Until now the function of this place was not clear. The surrounding wall did not have corner towers, and was relatively thin, so the scientists doubted its defensive functions. This year's survey dispelled those doubts. Researchers discovered sixteen bands of stone stairs leading to the top of the wall, and gained confidence that the structure had a practical purpose. An easy way to climb to the top of the wall was needed to take defensive action. The wall itself turned out to be much higher than previously thought.

That is not all. In several fortresses researchers also found traces of trebuchets, ballistic devices that tossed stones at distances up to 100 m.

According to the scientist, the lack of homes points to the refugial function of these structures. The only brick building was usually the church. "In the medieval mentality the church was the best machinery of defence: it offered a divine protection. episodes of the siege of Constantinople by the Arabs, known from descriptions of the chroniclers, testify to the wonderful role of Divine Providence in the defence of the walls" - said Prof.

Żurawski. In one case, the church functioned in an abandoned fortress until the 17th century.

Nubian refuges did not have permanent crews. They were defended by the people who protected themselves from danger in there. The local population sought shelter from the incursions of the Bedouin tribes, who arrived from the desert areas.

"The 4th century was the time of the collapse of the Kingdom of Meroë, the collapse of the central government, regional divisions. All this in addition meant that the danger was real, and the borders - unguarded" - said Prof. Żurawski.

Defensive structures were built 20-30 km apart. Between them were observation towers that allowed early detection of impending danger.

Researchers plan to continue excavations within a few defensive structures. Over the next two years, they expect to return to the field several times, to further understand the mysteries of the "Sudanese pyramids".

PAP - Science and Scholarship in Poland, Szymon Zdziebłowski

**Please visit the site: <http://scienceinpoland.pap.pl/en/news/news,410546,poles-have-solved-the-riddle-of-defensive-structures-of-the-middle-nile.html>**

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## **DID THE PHOENICIANS EVEN EXIST? EVERYBODY IN THE MEDITERRANEAN AROUND 3,000 YEARS AGO HATED AND ENVIED THESE MASTERS OF SEAFARING, BUT WHO EXACTLY WERE THESE PHOENICIANS? BY PHILIPPE BOHSTROM**

The Phoenicians are famed for being master seamen who traded with the peoples around the Mediterranean, spreading their alphabet as they sailed. Yet although they established trade centers as far as Spain and North Africa and founded the city of Byblos, which gave its name to the most influential book ever published, surprisingly little is known about them. Even their name comes from Homer, who dubbed them "Phoenicians", meaning "purple men", a reference to the murex dye for which they were famed.

The Old Testament never actually mentions Phoenicians. The only reference to that name is in ancient Greek writings, and they were referring to merchants living in cities along the coast of modern-day Lebanon.

In other words, the "Phoenicians" mentioned by the ancient Greeks were part of what the biblical authors called "Canaanites", in terms of archaeology, religion and language. There was not much setting them apart from other Semitic cultures.

### **With friends like these**

The Phoenicians were both hated and admired by local peoples everywhere in the Mediterranean region, from the ancient Israelites to the Romans to the Greeks.

One of the reasons we know so little about them, is that they left behind almost no written records, only inscriptions (such as dedications at temples). A lot of them: Archaeologists have found more than 10,000 sanctuary inscriptions, but they are of little value, since they are all roughly the same. Their writings teach archaeologists a great deal of one particular kind of dedication to the gods, that's all.

Most of what is known of them springs from Hebrew, Roman and Greek authors, who missed no opportunity to belittle the Phoenicians' achievements.

The truth of the matter is, however, that the Greeks borrowed a great deal from them, especially in regard to seamanship.

In the centuries after 1000 BCE, after the collapse of the Bronze Age, the Greeks had become isolated, with little contact with the Near East. They lost their knowledge of the surrounding seas, as we learn from the legendary travels of much-suffering Odysseus.

One of the oldest surviving references to the Phoenicians is in fact from Homer. In the Odyssey, Phoenician merchants are busy in the Aegean, and Odysseus himself pretends to be a trader seeking profit (Hom. Odyssey 8.159-164).

That the Greeks were unwittingly aware of these cultural exchanges is reflected in the myth of Europa, a beautiful Phoenician princess whom Zeus seduced, disguised as a bull. When Europa came to pat the beautiful animal and even dared to sit on its back, the "bull" rushed away over land and sea to Crete, where he resumed his godly guise and poured out his declarations of love. Europa later became the mother of King Minos.

Back in the Holy Land, the city-state of Tyre was said to have helped make King Solomon rich and to construct a navy (Ezekiel 27). These Tyrians were among the Phoenicians of whom the Greeks were so sour. This era, around the 10th century BCE or so we are told in the bible, was the only period in which the "united kingdoms" of David and Solomon actually flourished, if they existed at all, or to what degree, a matter of some debate.

Who were these enigmatic seafarers, feared and admired throughout antiquity? All we know about them, is from people who didn't like them. What were they really like?

### **Lords of the Sea**

The Phoenicians may have spread their unique alphabet throughout the region, yet they left behind almost no historical records.

The Phoenicians are credited by the Greeks with inventing merchant ships. In the bible, these vessels came to be known as the ships of Tarshish - "The ships of Tarshish did sing of thee in thy market: and thou wast replenished, and made very glorious in the midst of the seas " (Ezekiel 27:25).

So, evidently, the Phoenicians were master shipbuilders. They were renowned for the maneuverability and speed of their ships, due to the paradigm-changing Phoenician invention of the cutwater, which attaches to the ship's hull. These oceangoing ships could undertake 4,000-km long journeys from Phoenicia to Spain.

In fact, the Phoenicians had already become expert seamen hundreds of years before they made their entrance into the history of the Bible.

### **The origin of the Phoenicians**

The homeland of the Phoenicians who plagued the Mediterranean was a narrow strip of coast that more or less corresponds roughly to modern-day Lebanon. Where they may have originated beforehand, before their first appearance in Lebanon, is the subject of much debate.

Herodotus, the Greek historian, claims that they came from the Red Sea, implying that they arrived from the Arabian Gulf or Indian Ocean. However, both archaeological evidence and other ancient texts counter Herodotus' claims.

From 3400 BCE, a group of people were already living and farming in the coastal city of Byblos. By 3200 BCE these people seemed to have been established along the coastal plains of Lebanon.

Contemporary historians think that the Phoenicians were a loose association of neighboring states, and that term Phoenicia is artificial. The peoples then would have

identified themselves with their cities, Sidon, Tyre, Berytus, Byblos or other ports, rather than belonging to a unified civilization.

### **'Thou art become a terror'**

In the Hebrew bible, the power of the Phoenicians (such as the king of Tyre) was associated with their ships. The Book of Ezekiel 27 says: "Who is there like Tyre ... thy wares went forth out of the seas, thou filledst many peoples: thou didst enrich the kings of the earth with thy merchandise and thy riches ... thou art become a terror..."

The Phoenicians gradually built a thriving merchant fleet. As their profits grew and their technology advanced, they constructed ever larger ships that could handle longer voyages.

After reaching Cyprus, Sardinia, and the Balearic Islands, the Phoenicians followed the North African coastline in a westerly direction until they reached Spain.

In many ways, the kingdoms that controlled the Eastern Mediterranean from the 9th century BCE until the time of Alexander the Great resembled later Greek poleis.

The city of Tyre - then, a city on an island with protected anchorages and access to mainland agriculture - can be seen as a blueprint for the colonies the Phoenicians established overseas, for instance the two in modern Spain, on the side of the Atlantic coast, and several more in France, Sicily, North Africa and more.

When the Phoenicians built these settlements is of course also debated, but apparently, their expansion also goes back some 3000 years.

But the Phoenicians may not have been set on conquering the world, only on extracting money from it. They did so by establishing trading outposts that sat on major trading networks, such as Carthage. Thus they became the lords of the sea.

### **Rich pickings in Spain**

In their lust for profit, Phoenician explorers ventured into the Atlantic Ocean, trading tin with the British Isles and amber from Scandinavia.

Their fine red-wheeled pottery, their ivory and their storage jars containing wine and olive oil have been found all over the Mediterranean, as far as Southeastern Spain, where they founded cities located in today's Cádiz and Huelva in Spain.

Archeologists have uncovered thousands of Phoenician-type pot shards dating to the 10th and 9th century BCE underneath the modern port cities of Cádiz and Huelva.

The Phoenicians traded salt, wine, dried fish, cedar, pine, metalwork, glass, embroidery, fine linen, and cloth dyed with the famous Tyrian purple. What did they receive in exchange?

Southern Spain proved to be the Mediterranean's richest source of silver and other valuable metals. Regarding Tyre, the principal port of the Phoenicians, the prophet Ezekiel said: "You did business in Spain and took silver, iron, tin, and lead in payment for your abundant goods." (Ezekiel 27:12)

The origin of at least some of the metal was probably an area near the river Guadalquivir, not far from Cádiz, which seems to have a seemingly inexhaustible supply of these minerals. Today the region is known as Rio Tinto and ore is still being extracted to this day.

### **Beyond the 'United Monarchy'**

According to the bible, King Solomon of Israel exchanged goods with the Phoenician King Hiram in the 10th century BCE.

Interestingly, Hiram sends cedar timber from the western slopes of Lebanon, as well as craftsmen skilled in working with wood and stone (2 Samuel 5:11; 1 Chronicles 14:1) to make the Temple in Jerusalem. In return Israel sends wheat, barley, olive oil and wine (1 Kings 5:2-6; 2 Chronicles 2:3-10) They then formed joint business ventures to trade with the Arabian Peninsula, peoples around the Red Sea and the Hejaz (today Saudi Arabia), where they acquired exotic fragrances.

The archaeological data supports, if not all the details, the big picture painted in the bible.

The discovery of the Tel Dan stele, mentioning a House of David, supports the existence of a David as a historical figure. Excavations at Tyre have revealed that the city was expanding at that time, becoming the leading Phoenician city on the coast, overtaking Byblos and Sidon. (However, the debate when the books of the Old Testament were written remains.)

### **Sparring for power**

The Phoenicians became successful merchants - but there may be good reason the ancients of the region couldn't stand them: they had their ruthless side.

Reportedly, they sometimes lured people aboard ship on the pretense of showing them their wares, only to enslave them.

In a 9th century BCE inscription, a Tyrian commander boasts about how his troops devastated Cyprus.

A bit later, when the Greeks began to build colonies beyond the Aegean, friction with the Phoenicians arose, that did not cease until after the fall of the greatest Tyrian colony, Carthage.

So determined were these armed traders to maintain the monopoly on their trade that the Greek geographer Strabo (III.5.11) reported a Phoenician captain running his ship aground, and drawing his enemies after him, rather than allow them to gain knowledge of his route.

Phoenicians were renowned as the ancient world's greatest sailors and navigators. They pioneered the use of the Pole Star (Phoinike in Greek), enabling them to navigate at night, a capability of obvious strategic value.

The Sidonians - who were also Phoenicians - were the best sailors in the fleet fielded by the Persian emperor Xerxes, in the famous Battle of Salamis, in 480 BCE. Xerxes

himself even travelled in a Sidonian ship. In fact, most of the Persian fighting fleet consisted of Phoenician ships, manned by Phoenician crews. (The Persians lost to the Greeks anyway.)

King Sennacherib of Assyria ordered the construction of "Mighty ships (after) the workmanship of their hand, they built dexterously, Tyrian, Sidonian and Cypriot sailors, captives of my hand, I ordered [to descend] the Tigris with them..." (ARAB.II.319).

As for their ships themselves, Xenophon (Oeconomicus VIII.14) quotes Ischomachus as saying, "I think that the best and most perfect arrangement of things I ever saw was when I went to look at the great Phoenician sailing vessel."

The Phoenicians considered their warships to be living creatures. They painted eyes on the side of the ships so they could guide the sailors through safe passageways.

The Roman writer Valerius Maximus mentions how Phoenicians consecrated newly built ships by rolling the hull over slaves or captives, so to avoid blood-letting while it was at sea.

In later times Sidonian ships performed peacetime patrols, to keep the Eastern Mediterranean clear of pirates, an activity with no doubt a long history.

### **In the shadow of Baal**

Though they dispersed throughout the western Mediterranean, the Phoenicians remained united by their religious practices.

For centuries, Carthage sent a delegation to Tyre each year to sacrifice at the temple of the city-god Melqart. In Carthage itself, the chief deities were the divine couple Baal-Hammon, meaning "Lord of the Brazier," and Tanit, identified with Astarte.

The most notorious characteristic of Phoenician religion was the practice of child sacrifice.

The area around the western Mediterranean (Carthage, Western Sicily, Southern Sardinia) is littered with burials of sacrificed children, but in truth, the practice was commonplace in the Phoenician cities all over the Levant.

Diodorus Siculus reports that in 310 B.C.E., during an attack on the city, the Carthaginians sacrificed over 200 children of noble birth to appease Baal-Hammon.

During excavations in Carthage, archaeologists discovered what came to be called the Tophet, after the Biblical expression used at 2Kings 23:10 and Jeremiah 7:31. Digs revealed multiple levels of urns containing the charred remains of animals (used as substitute sacrifices) and young children (1-2 months old), buried under stelae with votive inscriptions. It is estimated that the Tophet contains the remains of over 25,000 children who were sacrificed during just one 200-year period.

### **The Phoenician Legacy**

Like all good businessmen, the Phoenician traders put their agreements in writing.

As they travelled west and established trading outposts along the Mediterranean, they brought their alphabet with them, planting the seeds of literacy in the Aegean. Even Hebrew letters as we know them derive from the Phoenician alphabet more than they do from ancient proto-Hebrew.

The Phoenicians are believed to have invented the 22-letter alphabet in about 1300 BCE. As they spread, other nations saw the advantages of the Phoenician alphabet that began with the letters Alep, Bet, Gimel, Dalet. It became in fact the bases for the Greek alphabet, which was in turn the precursor of the Latin script, one of the most widely used alphabets today.

**Please visit the site:**

<http://www.haaretz.com/jewish/archaeology/1.733940?v=286BFF1959CD15982EE82C466D49445C> [Go there for many pix]

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## **3,500-YEAR-OLD GRAVE FILLED WITH EXOTIC VALUABLES FOUND IN CYPRUS - THUTMOSIS SCARABS, MAGNIFICENT IMPORTED CERAMICS AND GEMSTONES ATTEST TO A RICH BRONZE AGE CITY IN CYPRUS, BY PHILIPPE BOHSTROM**

A tomb containing a treasure of Egyptian scarabs, diadem, exotic luxuries and pearls and earrings set in gold has been discovered in a 3,500-year-old grave excavated in Hala Sultan Tekke, a Bronze Age city in Cyprus.

The gold objects and the more than 100 richly ornamented ceramic vessels found in the grave and in a nearby offering pit attest to Cyprus' importance as a commercial hub, with trade connections sprawling as far north as Sweden.

A family grave containing eight children and nine adults was discovered in an older city quarter of Hala Sultan Tekke, an important trading hub from 1600-1150 BCE. Now archaeologists from Gothenburg University have discovered one of the grandest graves from the Late Bronze Age ever found on the island of Cyprus. The burial contained numerous magnificently worked gold objects, including the diadem, pearls, earrings and scarabs, and the richly ornamented ceramic vessels, originating from various cultures, confirming Cyprus' central role in long-distance trading of the time.

"We discovered an older city quarter from around 1250 BCE, and outside the city we found an incredibly rich grave, one of the richest in Cyprus from this period, and an offering pit next to it," Prof. Peter Fischer, head of the excavations, told Haaretz.

The excavations are part of the Swedish Cyprus Expedition, an archaeological investigation of early Cypriot history that began in 1927. Fischer, a professor in Cypriot and Near Eastern archaeology, has led the excavations since 2010 and considers this excavation season to be the most successful to date.

### **Ancient Cypriots didn't live long**

The area where the grave was found is exposed due to erosion caused by farming. Before starting the dig, a geophysical survey was performed using radar and other equipment, able to identify items hidden in the ground down to a depth of two meters.

The surveying revealed almost 100 underground pits, some of which turned out to be wells, some offering pits and - as of this year - a grave.

"Wells are usually one meter in diameter, but this structure was 4 x 3 meters. The grave is a family tomb for eight children ages 5-10 years and nine adults, of whom the oldest was about 40 years old. The life expectancy was much shorter back then than it is today," says Fischer.



Other discoveries include gemstones and five cylinder seals, some produced locally and some possibly from Syria and Mesopotamia, and a bronze dagger.

The archaeologists assign the greatest importance to the more than 140 complete ceramic vessels, most of which were spectacularly decorated, for example, with people sitting in a chariot drawn by two horses, and a woman wearing a beautiful dress. Some vases bore religious symbols or animal illustrations, for instance of fish.

Many of the vessels had been imported from nearby Greece and Crete but some hailed from Anatolia, in present-day Turkey, and others from the Levant.

"The pottery carries a lot of archaeological information. There were for example high-class Mycenaean imports, pottery from Greece, dated to the 15th century BCE. The motif of the woman, possibly a goddess, is Minoan, which means it is from Crete, but the vase was manufactured in Greece. Back in those days, Crete was becoming a Greek 'colony'," Fischer told Haaretz.

According to Fischer, the painting of the woman's dress is highly advanced and shows how wealthy women dressed around this time. A similar motif can be found on frescos, for example in the Palace of Knossos in Heraklion, Crete.

### **Missing city**

Other finds originated in Egypt. Two of the stone scarabs are gold-mounted and one features hieroglyphs spelling "men-kheper-re" next to an illustration of a pharaoh. This has given the archaeologists a unique opportunity to tie the roughly 3,500-years-old find to a historic person. The inscription refer to Egypt's most powerful pharaoh Thutmose III (1479-1425 BCE), during whose reign Egypt peaked in size and influence as he conquered both Syria and parts of Mesopotamia, present-day Iraq.

"We also found evidence in the city of large-scale manufacturing and purple-dyeing of textiles. These products were used in the trade with the high cultures in Egypt, Anatolia, the Levant, Mesopotamia, Crete and Greece, which explain the rich imported finds," Fischer says.

Clearly the family buried there had been of great importance and wealth. But oddly, while the archaeologists have found these persons' last resting ground, they haven't found the older part of the city where they lived.

"It must have been rich (or a rich period), judging from the grave we found this year. It is most likely located closer to the burial site in an area that still has not been explored," says Fischer.

This year's excavation period is over. Until next year's on-site work begins, the researchers have intense processing of their finds to look forward to.

"In spring 2017 we'll continue uncovering of parts of the city and the burial site," Fischer sums up. "As the integrity of both areas is threatened by agricultural activities, there is a



need for quick action to secure our shared cultural heritage before it is destroyed forever."

Please visit the site: <http://www.haaretz.com/jewish/archaeology/1.734913>

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## **RESTORED POMPEII KITCHENS SHOW HOW ROMANS COOKED**

The ancient Roman kitchens of a Pompeii laundrette have once again been kitted out with pots and pans as part of a new project that is trying to give visitors a sense of what day-to-day life in the city was like.

Before they were buried by a volcanic eruption in AD 79, the kitchens once provided food for the hungry attendants of the three-storey laundrette, the Fullonica di Stephanus.

The Fullonica was the place where wealthy Roman patricians sent their togas to be washed in huge baths using clay and urine. The garments were then rinsed, dried and placed on special presses to ensure they returned to their noble owners crease-free.

Thanks to a refurbishment which finished on Monday, the kitchens inside the Fullonica now appear as they did 2,000 years ago, complete with metal grills, pots, pans and earthenware crockery.

The new installment provides an interesting window on Roman cooking practices.

Instead of using gas or electric hobs, the Romans cooked their food over specially-made troughs, in which beds of flaming charcoal were placed.

Hunks of meat, fish and vegetables were then laid on grills directly over the coals, while soups and stews simmered away in pots and pans that were stood on special tripods to elevate them above the scorching embers.

All of the cooking equipment now on display was found in and around the kitchens when they were first excavated in 1912 by the then Superintendent of Pompeii, Vittorio Spinazzola. Spinazzola initially left all the items in the kitchen, but his predecessors packed them away in storage or placed them in glass display cabinets in different areas of the site.

"We're delighted the pieces have finally been put back on display where they were found and we're certain they will be appreciated by modern tourists, eager to learn how people lived in antiquity," said Massimo Osanna, the current Archaeological Superintendent of Pompeii.

As part of the same initiative, further examples of ancient Roman culinary practices were also given permanent exhibition at the city gym, the Pallesstra Grande, on Monday. Visitors can now marvel at a carbonized loaf of two-millennia-old bread and admire a metal pot containing the fossilized remnants of a bean and vegetable soup.

**Please visit the site: <http://www.thelocal.it/20160802/refurbished-pompeii-kitchens-show-how-ancient-romans-cooked> [Go there for pix]**

## **ARCHAEOLOGISTS REVEAL SECRETS OF ROMAN PRISON THAT HELD BOTH CHRISTIAN SAINTS AND JEWISH REBELS - THE TULLIANUM DUNGEON, OLDER THAN ROME ITSELF, WAS WHERE ROMANS LOCKED UP THEIR WORST ENEMIES: FROM THE GREAT JEWISH REVOLT LEADER TO (SUPPOSEDLY) ST. PETER AND ST. PAUL, BY ARIEL DAVID**

One of the world's oldest and most terrifying prisons, reserved for ancient Rome's fiercest enemies, has reopened to the public after years of excavation that have revealed new clues about the very birth of the Eternal City itself.

The Carcer Tullianum (Tullianum Prison in Latin) is notoriously known as the squalid underground dungeon where the Romans would lock up enemy leaders, including Simon Bar Giora, one of the architects of the Great Revolt of 66-70 C.E. Other honored inhabitants, according to medieval Christian tradition, were the apostles Peter and Paul.

But the three-year excavation has shown that the structure, located between the bottom of the Capitoline hill and the entrance of the Forum, was much more than just a prison, and may in fact predate the founding of Rome itself.

### **Before Romulus killed Remus**

Archaeologists were surprised when they turned up walls made of tufa stone blocks and other finds dated to the late ninth or early eighth century B.C.E.

Ancient Roman historians believed their city was founded around 753 B.C.E. on the nearby Palatine hill, and modern archaeologists have found some evidence supporting this.

But by the time Romulus supposedly founded Rome and killed his twin brother Remus, structures like the Tullianum were already standing. In fact, the building was apparently part of a wall that surrounded the Capitoline, defending a village on top of that hill.

The discovery of such important structures predating the city's legendary birthdate supports the theory that Rome did not rise from a single foundational act, but from the union of several communities that may have inhabited its famous seven hills from the late Bronze Age, says Patrizia Fortini, the archaeologist who led the dig.

### **Puzzling finds**

Researchers also discovered that the round building, with walls up to three meters thick, did not start out as a prison, but as a cultic center built around a small, artificially-dug spring that gushes into the lowest cell of the dungeon to this day.

This may also have given the place its name, as tullius means "water spring" in Latin. Other scholars link it to the name of two of Rome's legendary kings, Tullus Hostilius or Servius Tullius.

It was next to the spring that Fortini and her colleagues discovered a grouping of votive offerings: ceramic vessels, remains of sacrificial animals and plants, dating back as far as the sixth century B.C.E.

Alongside fairly mundane offerings such as grapes and olives, they also found the seeds and rind of a lemon. This is the first appearance of the fruit in Europe and is somewhat of a head-scratcher for archaeobotanists, who had thought the citrus reached the continent from the Far East at a much later date, Fortini said.

While it is unclear which deity was being worshipped in the Tullianum, the cult was probably not just about offering up animals and exotic fruits. The site also yielded the grisly burial of three individuals: a man, a woman and a female child, all dated to the earliest stage of the monument. The man was found with his hands bound behind his back and signs of blunt force trauma to the skull.

Were the burials connected? Was it a human sacrifice? Or an execution? We don't know, Fortini admits.

### **The gates of Hell**

The archaeologist says that all these activities were probably connected to the spring, which the ancient population may have been seen as a conduit between the world of the living and the underground world of the dead.

This religious connection to the underworld may have inspired the later use of the site as a prison, she told Haaretz during a tour of the site, which reopened late last month.

"The prisoners held here were all leaders of enemy populations or traitors, all people who were believed to have endangered the survival of Rome," Fortini said. "The idea was that they had to disappear, they had no right to be a part of human society, so they were symbolically removed from the world and confined to the underworld."

The use of the Tullianum as a prison became common sometime during the Roman Republic, around the fourth century B.C.E. The once large, airy sanctuary was divided into two vaulted, claustrophobic levels, the lowest of which encased the spring and was accessible only through a tight opening, still visible today, used to lower prisoners into what must have seemed like a dark and foul-smelling antechamber to Hell.

"It was not a prison in the way we think of it today," Fortini said, noting that long-term incarceration was rare in the Roman world. Monetary fines, enslavement, and various cruel and inventive forms of execution were a more common fate for criminals or captured enemies.

The Tullianum usually served as a holding cell for high-value captives waiting to be paraded in the triumphal procession led by the general who had vanquished them. They would then be returned to jail, to be starved to death or quietly executed, usually by strangulation, Fortini said.

### **A deadly bath**

Besides Simon Bar Giora, other enemies of Rome who spent their last days in the Tullianum include the Gaulish chieftain Vercingetorix, who united the Gauls in revolt against Julius Caesar. He languished in the dungeon for six years awaiting Julius Caesar's triumph, and was executed in the prison after the procession.

The historian Plutarch tells us that Jugurtha, the defeated king of the north African reign of Numidia, mocked his jailers as he was lowered naked into the dark, damp dungeon, exclaiming: "By Hercules, o Romans, this bath of yours is cold!" He succumbed to hunger and exposure a few days later.

One of the few who made it out alive was Aristobulus II, the Hasmonean king of Judea who had been imprisoned there by Pompey.

The Jewish historian Josephus relates that when Caesar took control of Rome he freed Aristobulus, hoping to use him to foment rebellion in the Levant against his rival, but the Judean king was soon poisoned by Pompey's followers.

### **Holy again**

As the Roman Empire became Christian, use of the Tullianum as a jail declined. By the 7th century it was back to being a holy site, revered as the place where Peter and Paul were held before their martyrdoms.

The ancient water source was repurposed by Christian tradition, and was said to have been miraculously sprung by the apostles to baptize their jailers. Now called the Mamertine (possibly because of a temple of Mars that had stood nearby), by the early Middle Ages the dungeon was transformed into a church, and a second church was built on top of the prison during the Renaissance.

Archaeologists have found a trove of medieval artifacts, including rare glass and ceramic vessels, connected to the cult of the saints, all displayed in a new museum at the site, which is managed by the Opera Romana Pellegrinaggi, a Vatican office that organizes pilgrimages and protects holy sites..

Actually, there is little evidence to support the legend that Peter and Paul were held there. But Fortini says this tradition made sure the building was protected from looting during the Middle Ages - preserving this monument from the archaic Roman period to this very day.

[URLs and captions for the pictures accompanying the article.]

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[further enlargeable picture] Tullianum lower dungeon: The round opening in the roof was used to lower prisoners into the cell. The hole in the center of the floor, into which the white cord disappears, is the spring.

Credit: Ariel David

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[further enlargeable picture] A modern bas-relief depicting St. Peter and St. Paul baptizing their jailers in the Roman prison.

Credit: Ariel David

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[further enlargeable picture] The lemon pips (right) found among the votive offerings, compared with seeds from a modern citrus in the newly-opened museum at the Tullianum prison.

Credit: Ariel David

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[further enlargeable picture] Remains dated to the late 9th or early 8th century B.C.E. of a man (left) and woman buried in the Tullianum. The man had his hands tied behind his back and may have been killed by a blow to the head.

Credit: Ariel David

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[further enlargeable picture] 13th-century fresco of Christians praying, in the upper level of the Tullianum, which was transformed into a church during the Middle Ages.

Credit: Ariel David

[http://www.haaretz.com/polopoly\\_fs/1.735258.1470308471!/image/1289050063.JPG\\_gen/derivatives/fullscreen\\_1406xAuto/1289050063.JPG](http://www.haaretz.com/polopoly_fs/1.735258.1470308471!/image/1289050063.JPG_gen/derivatives/fullscreen_1406xAuto/1289050063.JPG) [enlargeable picture]

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[further enlargeable picture] The entrance to the site, which was known as the Mamertine prison during the Middle Ages.

Credit: Ariel David

Please visit the site: <http://www.haaretz.com/jewish/archaeology/premium-1.735244>

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## **SCIENTIFIC EVIDENCE OF MYTHICAL GREAT FLOOD FOUND IN CHINA FLOOD 4,000 YEARS AGO SAID TO HAVE BEGUN CHINA'S FIRST DYNASTY, THE XIA**

A great flood at the dawn of Chinese civilization was said to have swept away settlements, the water rising so high that it overran hills, mountains and even heaven itself. It was the sage King Yu who tamed the waters by building ditches, the legend went, thus earning a mandate to rule and laying the foundation for China's first dynasty, the Xia.

But until now, scientists could not pin down evidence that the flood, or Yu, or even the Xia Dynasty ever existed outside of the origin myths passed down through millennia.

Now a team of researchers led by Wu Qianlong, a former Peking University seismologist, say in a study published this week in the journal Science that they've indeed found evidence that a flood submerged a vast swath of the country almost 4,000 years ago, possibly lending weight to a longstanding - though controversial - theory that the Xia Dynasty did exist as China's first unified state.

"No scientific evidence has been discovered before" for the legendary flood, Wu told a telephone news conference.

15 trillion litres of water

Using radiocarbon dating of bones and soil samples along the Yellow River, Wu's team established that an earthquake triggered a huge landslide, damming the waterway in 1920 B.C.

The researchers pinpointed the date chemically from the skeletons of children in a group of 14 victims found crushed downstream, apparently when their home collapsed in the earthquake.

Please visit the site: <http://www.cbc.ca/news/technology/china-ancient-flood-1.3708724?cmp=rss>

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## **RUSSIAN ARCHAEOLOGISTS UNCOVER ANCIENT PERSIAN STELE INSCRIBED WITH A MESSAGE FROM KING DARIUS I DISCOVERY IN PHANAGORIA, THE ANCIENT GREEK SITE NEAR CRIMEA, IS OF "INTERNATIONAL SIGNIFICANCE"**

An archeological expedition sponsored by the Russian billionaire Oleg Deripaska has announced the discovery of a stele with a signature in the name of Persian King Darius I in the center of Phanagoria, the remains of an ancient Greek city near Crimea and the Black Sea.

Vladimir Kuznetsov, the director of the Phanagoria Historical and Archeological Museum-Preserve and of the Phanagoria expedition of the Institute of Archeology of the Russian Academy of Sciences described it as a landmark find that "is without exaggeration a discovery of international significance". Another discovery, of the ruins of ancient fortifications that researchers have preliminarily dated to "no later than" the end of the sixth century BC (destroyed earlier than the middle of the fifth century BC) "can become a phenomenon in classical archeology for the entire Mediterranean and Black Sea region".

The writing on the marble fragment is in ancient cuneiform used only by the Persian king, according to a press release issued by Deripaska's Volnoe Delo Foundation. Researchers estimate that around 10%-15% of the message has survived and that "the deciphered parts of the inscription make it clear that it was made on behalf of the famous king Darius I," who lived from 550-486 BC.

Kuznetsov says that the inscription is "evidently devoted to the crushing of the Ionian revolt" and places Phanagoria "in the context of one of the most important events of ancient history, which had far-reaching consequences for the Greeks as well as the Persians, and makes it possible to trace the connections of this colony with other parts of the Greek world and analyze its significance in advancing Hellenistic civilization on the Black Sea coast."

A report on a separate Volnoe Delo-sponsored website devoted exclusively to Phanagoria says that one of the words in the inscription is "Miletus", the name of the ancient Greek city in Ionia that was at the forefront of the revolt against Darius. Researchers surmise that Darius put up a marble stele to mark his victory and a fragment of it was later brought by ship to Phanagoria.

Volnoe Delo's statement notes that most of the approximately 200 Persian royal inscriptions known today were uncovered in Persepolis.

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Please visit the site: <http://theartnewspaper.com/news/russian-archaeologists-uncover-ancient-persian-stele-inscribed-with-a-message-from-king-darius-i-/%20>  
[Go there for pix]

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## **ROMAN 'CURSE TABLES' MADE OF GOLD** **DISCOVERED IN VIMINACIUM, SERBIA,** **BY VLADIMIR BANIC**

BELGRADE, Serbia - So-called "curse tablets" made of gold and silver have been discovered in Roman tombs, archaeologists said.

The finds were made at the Viminacium archaeological site in eastern Serbia, the location of the former capital of the Roman province of Moesia Superior.

The beginning of the inscription on one of items - which are known as "tabella defixionis" in Latin - reads: "Let all the forces and demons help that ..."

Some are written in Greek but they also they feature an incomprehensible language and symbols. Experts believe those were likely invented by the person who made the tablet, so its message could only be understood by gods and demons.

However, the find is considered significant because previous examples of the tablets were inscribed in lead - a much less valuable substance.

"This is a very important archaeological discovery because it shows us how luxurious the life in Viminacium was or how much hope they had in the 'curse tablets' so that they used precious metals," Miomir Korac, the chief archaeologist at the Viminacium site, told NBC News. "According to my knowledge, such tablets have never been found inscribed in gold anywhere. According to the Roman customs, gold was never put into graves."

Korac noted that people who live in that part of Serbia today are known for being superstitious. He added: "Opposing deities appear on these tablets, as if invoking both Christ and the Antichrist today, or Christ and pagan gods, and that is weird. This shows us that the process of converting to Christianity was slow."

Experts believe that that Viminacium had close to 40,000 inhabitants in the 4th century A.D. - the period in which the tablets were made.

That made the city "bigger by a third than Pompeii," Korac said, comparing Viminacium to modern London as it was home to people from "a mix of different nations."

He added: "We found that Christians and pagans were buried together and we can conclude that, at the time, they lived in harmony and tolerance."

However, within about 100 years the city was destroyed by the wave of incoming Huns following by the invasion of the Slavs in the 6th century A.D.

**Please visit the site: <http://www.nbcnews.com/science/science-news/roman-curse-tablets-made-gold-discovered-viminacium-serbia-n623426> [Go there for image]**

## **ARCHAEOLOGY TEAM MAKES UNPRECEDENTED TOOL DISCOVERY**

A research team working in Jordan has discovered the residual remains of butchered animals on stone tools used 250,000 years ago.

Archaeology team makes unprecedented tool discovery

UNIVERSITY OF VICTORIA-How smart were human-like species of the Stone Age? New research published in the Journal of Archaeological Science by a team led by paleoanthropologist April Nowell of the University of Victoria reveals surprisingly sophisticated adaptations by early humans living 250,000 years ago in a former oasis near Azraq, Jordan.

The research team from UVic and partner universities in the US and Jordan has found the oldest evidence of protein residue-the residual remains of butchered animals including horse, rhinoceros, wild cattle and duck-on stone tools. The discovery draws startling conclusions about how these early humans subsisted in a very demanding habitat, thousands of years before Homo sapiens first evolved in Africa.

The team excavated 10,000 stone tools over three years from what is now a desert in the northwest of Jordan, but was once a wetland that became increasingly arid habitat 250,000 years ago. The team closely examined 7,000 of these tools, including scrapers, flakes, projectile points and hand axes (commonly known as the "Swiss army knife" of the Paleolithic period), with 44 subsequently selected as candidates for testing. Of this sample, 17 tools tested positive for protein residue, i.e. blood and other animal products.

"Researchers have known for decades about carnivorous behaviours by tool-making hominins dating back 2.5 million years, but now, for the first time, we have direct evidence of exploitation by our Stone Age ancestors of specific animals for subsistence," says Nowell. "The hominins in this region were clearly adaptable and capable of taking advantage of a wide range of available prey, from rhinoceros to ducks, in an extremely challenging environment."

"What this tells us about their lives and complex strategies for survival, such as the highly variable techniques for prey exploitation, as well as predator avoidance and protection of carcasses for food, significantly diverges from what we might expect from this extinct species," continues Nowell. "It opens up our ability to ask questions about how Middle Pleistocene hominins lived in this region and it might be a key to understanding the nature of interbreeding and population dispersals across Eurasia with modern humans and archaic populations such as Neanderthals."

Another result of this study is the potential to revolutionize what researchers know about early hominin diets. "Other researchers with tools as old or older than these tools from sites in a variety of different environmental settings may also have success when applying the same technique to their tools, especially in the absence of animal remains at those sites," adds Nowell.

The paper, "Middle Pleistocene Subsistence in the Azraq Oasis, Jordan: Protein residues and other proxies," appears in the September issue of the Journal of Archaeological

Science, 73 (2016) 36-44, published by Elsevier. The paper is co-authored by Nowell and Daniel Stueber of the University of Victoria; Christopher Ames, also of UVic and of the University of California, Berkeley; Cameron Walker of Oregon Health and Science University; Carlos Cordova of Oklahoma State University; James Pokines of Boston University School of Medicine and with the Office of the Chief Medical Examiner in Boston; Regina DeWitt of East Carolina University; and Amer Al-Souliman of Hashemite University, Jordan.

This research was fully funded by a grant from the Social Sciences and Humanities Research Council of Canada.

**Please visit the site:** <http://popular-archaeology.com/issue/summer-2016/article/archaeology-team-makes-unprecedented-tool-discovery>

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## **RARE FRESCOES FROM ROMAN PERIOD DISCOVERED AT ZIPPORI IN THE GALILEE IN HEBREW UNIVERSITY EXCAVATIONS**

New finds contribute significantly to research of Roman art in Israel: Provide first evidence of figurative images in wall paintings at the site, and precede earliest mosaics discovered at the site by a hundred years

A team from the Hebrew University of Jerusalem has discovered hundreds of fragments belonging to frescoes from the Roman period, in the Zippori National Park. The fragments, which contain figurative images, floral patterns and geometric motifs, shed light on Zippori (Sepphoris), which was an important urban center for the Jews of the Galilee during the Roman and Byzantine periods.

The discovery was made this summer in the excavations at Zippori, in memory of Ursula Johanna and Fritz Werner Blumenthal of Perth, Western Australia. The excavations are directed by Prof. Zeev Weiss, the Eleazar L. Sukenik Professor of Archaeology at the Hebrew University's Institute of Archaeology.

The frescoes decorated a monumental building that was erected in the early second century CE north of the decumanus, a colonnaded street that cut across the city from east to west and continued to the foot of the Acropolis. The building, whose function is not clear at this stage of excavation, spread over a wide area, and the nature of the artifacts discovered indicate that it was an important public building. In the center of the building was a stone-paved courtyard and side portico decorated with stucco. West and north of the courtyard, several underground vaults were discovered. Some of these were used as water cisterns and were of high quality construction. The monumental building was built on the slope and the vaults were designed to allow the construction of the superstructure located on the level of the decumanus.

The monumental building was dismantled in the third century CE for reasons that are unclear, and was replaced by another public building, larger than its predecessor, parts of which were uncovered during this season. The monumental building's walls were dismantled in antiquity and its building materials - stone and plaster, some colorful - were buried under the floors of a newly established Roman building on the same location. Hundreds of plaster fragments discovered during this excavation season were concentrated in one area, and it seems that they belong to one or several rooms from the previous building.

The patterns on the plaster fragments are varied and are decorated in many colors. Among them are geometric patterns (guilloche) and brightly colored wall panels. Other fragments contain floral motifs (light shaded paintings on red backgrounds or various colors on a white background).

Particularly important are the pieces which depict figures - the head of a lion, a horned animal (perhaps a bull?), a bird, a tiger's hindquarters and more - usually on a black background. At least one fragment contains a depiction of a man bearing a club.

Research on these pieces is in its early stages but it is already clear that at least one room in the building was decorated with figurative images, possibly depicting exotic animals and birds in various positions.

The population of Zippori prior to the Great Revolt against the Romans was not very large, and archaeological finds dating to this period are particularly notable for the absence of figurative images - both humans and animals. The construction of the Roman city of Zippori after the Great Revolt, in the late first century and the second century CE, is indicative of a change in the attitude of Galilean Jews toward Rome and its culture. The city gained the status of a polis thanks to its loyalty to Rome during the Great Revolt, and constructed monumental public buildings, as befit a polis, that stood out in the urban landscape. This building boom also included the monumental building discovered north of the decumanus whose walls were decorated with frescoes, and whose remains were discovered during this season.

The new finds in Zippori contribute significantly to the research of Roman art in Israel. To date, excavators uncovered the walls of several public and private buildings from Roman Zippori (second and third centuries CE) which were decorated with colorful frescoes in geometric and floral patterns. This season's finds are the first, only and earliest evidence of figurative images in wall paintings at the site. The finds date to the beginning of the second century CE. Parallels to these finds are virtually unknown at other Israeli sites of the same period. Some panels bearing depictions of figures were discovered a few years ago in Herod's palace at Herodium, and according to Josephus (Life of Josephus 65-69) the walls of the palace of Herod Antipas in Tiberias were also decorated with wall paintings depicting animals; but beyond that, no murals with depictions of figures, dating to the first century and the beginning of the second century CE, have been discovered to date in the region.

The discovery in Zippori is unique and provides new information regarding murals in Roman Palestine. Zippori is well known for its unique mosaics. The newly discovered frescos are now added to the city's rich material culture. While the earliest mosaics discovered at the site date to around 200 CE, the ancient frescoes precede them by about a hundred years and are thus of great importance.

These finds raise questions relating to their socio-historic background. Who initiated the construction of the monumental building that was discovered north of the decumanus? Who is responsible for choosing the patterns that adorn the walls, and for whom were they intended? The various finds uncovered throughout the site indicate that Zippori, the Jewish capital of the Galilee, was home to many Jewish inhabitants throughout the Roman period, but the city also had a significant pagan community for which the temple was built to the south of the decumanus, opposite the monumental building, parts of which were discovered this season. It is difficult to determine who was responsible for the construction and decoration of this monumental building, at this stage of excavation. However the new finds clearly reflect the multi-cultural climate that characterizes Zippori in the years following the Great Revolt, in the late first century and the second century CE.

### **About the Excavations at Zippori**

Most of the archaeological work conducted in Zippori since 1990 was led by the Institute of Archaeology at the Hebrew University in Jerusalem. This team worked both on the Upper Hill as well as in an area to the east. The Hebrew University team revealed a well-planned city built around an impressive network of streets. Various buildings, public as well as private, were built in the city which existed throughout the Byzantine period. Among the public buildings uncovered are a Roman temple, bath houses, a theatre, two churches, and a synagogue. Over 60 mosaics dating from the 3rd to 5th centuries CE have been uncovered to date in Zippori, in both public and private buildings. The mosaics include numerous rich and varied iconographic depictions, ranking the city among the most important mosaic centers of the Roman and Byzantine east. The assortment of finds that have come to light in the course of the excavations provides a wealth of information about this multifaceted urban center, allowing one to draw significant conclusions about this Hellenized city's demographic composition, architectural development, and everyday life, as well as the cultural relationships between the various communities residing in Zippori during the first centuries of the Common Era.

### **About The Institute of Archaeology**

The Institute of archaeology, the birthplace of Israeli archaeology, is a research and teaching unit within the Hebrew University's Faculty of Humanities. Academic programs include studies for B.A., M.A. and Ph.D. degrees in prehistoric, biblical, and classical archaeology, Civilizations of the Ancient Near East, and Computerized Archaeology. In addition to its role as a teaching and training institution, the Institute is involved in major archaeological endeavors and interdisciplinary research programs. Its excavations at major prehistoric and historic sites have shaped many of the current paradigms in Israeli archaeology and contributed to a better understanding of past human behavior. For more information, visit <http://archaeology.huji.ac.il>.

The Hebrew University of Jerusalem is Israel's leading academic and research institution, producing one-third of all civilian research in Israel. For more information, visit <http://new.huji.ac.il/en>.

Please visit the site: <http://new.huji.ac.il/en/article/32216> [Go there for pict]

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## **NOAH'S ARK MOSAIC UNCOVERED IN ANCIENT GALILEE SYNAGOGUE, BY MICHELE CHABIN**

JERUSALEM - Exquisite mosaics depicting biblical scenes - one of Noah's Ark, the other the parting of the Red Sea - were uncovered this summer by archaeologists excavating a fifth-century synagogue at Huqoq, an ancient Jewish village near the Sea of Galilee.

A consortium of universities, led by Jodi Magness of the University of North Carolina at Chapel Hill, uncovered the mosaics during its fifth annual excavation in June.

Magness said the mosaics, like others discovered at the synagogue since 2012, are of "extremely high artistic quality," based on their artistry and the high number of stone mosaic cubes used in the designs.

The Noah's Ark mosaic includes pairs of bears, donkeys, leopards, camels, lions, ostriches and snakes, just as described in the Book of Genesis.

The mosaic of the parting of the Red Sea features Pharaoh's soldiers drowning with their horses and chariots.

"Of course the story of Noah's Ark and the parting of the Red Sea were known to Jews, as well as Christians, at the time because they read the Hebrew Bible," Magness said. "We have other ancient synagogues where these scenes are depicted, though they are not common in synagogue art."

The archaeologist said excavation experts dug down to a level of soil where, based on findings elsewhere at the site, they hoped mosaics might be found.

"As our site conservator, Orna Cohen, worked methodically to brush away the dirt, little by little, we all stood around and began to see animals. At some point we realized this was a depiction of Noah's Ark."

Deciphering the second mosaic was harder, Magness said.

"We could see little bits and pieces of people, fish, chariots. We all stood around and guessed" whether the mosaic depicted a biblical story and if so, which one.

"I won the parting of the Red Sea" guess-a-thon, she said with a laugh.

But the Red Sea mosaic features a twist on the biblical story: a large fish swallowing Pharaoh's soldiers.

"This represents an elaboration on the story that must have been circulating at the time," she said.



The mosaics have been removed from the site for conservation and study.

But a previously discovered mosaic from the site that depicts Samson carrying the gate of Gaza on his shoulders (Judges 16:3) is on display at Kibbutz Ginosar, on the shores of the Sea of Galilee.

Magness would love to see the mosaics eventually restored to the Huqoq synagogue.

"It would require an enormous investment of money to develop the site, a building with a guard and cooperation between different government authorities that would have to take responsibility. Who owns the land? Who would maintain it?"

Still, she added, "There are conversations at the highest levels to make this happen."

**Please visit the site: <http://www.deseretnews.com/article/865659257/Noah7s-Ark-mosaic-uncovered-in-ancient-Galilee-synagogue.html> [Go there for pic]**

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## **RESEARCH REVEALS EFFECTIVENESS OF STONES THROWN AS WEAPONS BY STONE AGE HUNTERS**

Stone objects collected by prehistoric hunters were effective as throwing weapons to hunt animals, research at Leeds Beckett University reveals.

The research, published in the latest edition of Scientific Reports, shows that stone objects collected by prehistoric humans could inflict considerable damage to large animals over distances of up to 25 metres.

The researchers, led by Dr Andrew Wilson, an expert in perception, action and embodied cognition at Leeds Beckett, alongside Associate Professor Qin Zhu from the University of Wyoming, Professor Lawrence Barham and Professor Ian Stanistreet from the University of Liverpool, and Professor Geoffrey Bingham from Indiana University, analysed a sample of 55 spheroids (ball-shaped stone objects found in African archaeological sites) from the Cave of Hearths in the Makapan Valley in South Africa.

Using research on the perception of affordances (the possibility of an action on an object or environment) for maximum distance and therefore maximum speed and damage throwing, the researchers simulated the projectile motions the spheroids would undergo if thrown by an expert. These simulations were then used to estimate the probability of these projectiles causing damage to a medium-sized prey animal such as an impala. The researchers found that 81% of the stones analysed could have inflicted worthwhile damage over distances of up to 25 metres.

Previous research has suggested that the spheroids were used as percussive tools for shaping or grinding other materials; however most of the objects analysed by the team had weights that produce optimal levels of damage from throwing, rather than simply being as heavy as possible. This suggests that they could have been selected by Stone Age hunters to be used as projectile weapons.

Dr Andrew Wilson explained: "Whilst other animals have been known to throw objects on occasion, none can match the speed, accuracy and distances that a trained human can achieve. Humans are uniquely specialised for throwing, both anatomically and psychologically. Throwing has played a vital role in our evolutionary past, enabling us both to hunt prey and to compete with other carnivores to scavenge carcasses. The ability to damage or kill prey at a distance not only expands the range of foods available, but also reduces the risk of close confrontation with dangerous prey.

"Before the development of throwing spears, our ancestors were faced with the task of finding and using objects suitable for hunting and defence. Imagine a human, searching for an object to throw so as to cause the most damage possible to a prey animal or a competitor. Their job is to find an object of an optimum size and weight: large and heavy enough to fly far and cause damage, but not too large or heavy as to interfere with producing the high speed throw required for distance and damage. This is a perceptual task: the person needs to perceive throwing-relevant affordance properties of objects and

be able to discriminate between objects that vary in those properties. Other research has shown modern humans to be exceptionally good at this task.

"This study applies research about how modern humans perceive the throwing affordances of objects, to provide a mathematical analysis of the stones found at the Cave of Hearths and evaluate the of these objects as projectiles for throwing."

Professor Larry Barham, Department of Archaeology, Classics and Egyptology at the University of Liverpool, added: "Archaeologists have long puzzled over what these round stones were used for - they're about the size of a tennis ball but much heavier. This study shows that they are good hunting weapons when thrown overhand, and we know early humans could throw with power and accuracy. [Their upper body anatomy was much like ours.] The artefacts in this study were carried to the cave which suggests these people selected the stones for their size, shape and weight. Our modelling shows that these stones could have been used for hunting and that's an important piece of information given these ancestors lived before the invention of spears or the bow and arrow."

Professor Geoffrey Bingham added: "The ability to throw great distances was not a small thing: it was how we got lunch. We are the only animals - and even the only primates - with that talent. Our research suggests that the throwing of stones played a key role in the evolution of hunting before the development of spears. We don't think that throwing is the sole or even primary function of spheroids, but these results show that this function is an option that warrants reconsidering as a potential use for this long-lived, multi-purpose tool."

Scientific Reports is an online, open access journal from the publishers of Nature.

To view the full paper visit - [www.nature.com/articles/srep30614](http://www.nature.com/articles/srep30614)

For further details please contact Mark Dorey in the Communications team at Leeds Beckett on 0113 812 3021 or email <mailto:m.dorey@leedsbeckett.ac.uk>

**Please visit the site: <http://www.newswise.com/articles/view/658787>**

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## **SKELETAL REMAINS 'CONFIRM ANCIENT GREEKS ENGAGED IN HUMAN SACRIFICE'** **- BONES FOUND ON MOUNT LYKAION -** **WHERE ANIMAL OFFERINGS TO ZEUS** **WERE ALSO MADE - BUT SOME ARE** **URGING CAUTION OVER HOW TO** **INTERPRET THE DISCOVERY**

The discovery of a 3,000-year-old skeleton in Greece has excited archeologists, who believe that the finding may confirm one of the darkest legends of antiquity.

Greece's culture ministry announced on Wednesday that a Greek-American team of researchers had discovered the skeleton of a teenager on the side of Mount Lykaion - known to be the site of animal sacrifices to Zeus.

"Much later, sources talk about human sacrifices taking place on Lykaion," Anna Karapanagiotou, the head of the local archeological service, told a local municipal radio. "All this will be studied."

Mount Lykaion was associated with human sacrifice by many ancient writers, including Plato, and while it may be too early to speculate on how the teenager died, the location adds a strong connection. "It nearly seems too good to be true," said Dr Jan N Bremmer, professor emeritus of religious studies at the University of Groningen, Netherlands, and an editor of *The Strange World of Human Sacrifice*.

Bremmer said that until now, most studies of human sacrifice in ancient Greece had concluded that it was probably fiction. While the ancient Israelites, Romans and Egyptians engaged in human sacrifice for religious purposes, 20th-century archaeologists had thought that the practice was not common among the Greeks.

Bremmer remained somewhat skeptical about the finding and questioned whether the location influenced the interpretation.

David Gilman Romano, professor of Greek archaeology at the University of Arizona, who participated in the dig on Mount Lykaion said classical writers linked the remote peak with human sacrifice. According to legend, a young boy would be sacrificed with animals, before the human and animal meat was cooked and eaten. "Several ancient literary sources mention rumours that human sacrifice took place at the altar [of Zeus, located on the mountain's southern peak] but up until a few weeks ago there has been no trace whatsoever of human bones discovered at the site," said Romano.

"Whether it's a sacrifice or not, this is a sacrificial altar ... so it's not a place where you would bury an individual," he said. "It's not a cemetery."

He noted that the fact that the upper part of the skull was missing, while the body was laid among two lines of stones on an east-west axis, with stone slabs covering the pelvis was also interesting.

Bremmer said scholars tend to be fascinated by the prospect of human sacrifice in ancient Greece because it seems like a contradiction.

"On the one hand there's this picture of Greece as the cradle of civilisation, the birthplace of democracy, of philosophy, of rational thinking - but on the other hand we have these cruel cruel myths," he said.

The mountaintop in the Peloponnese region is the earliest known site where Zeus was worshipped and even without the possible human sacrifice element it was a place of slaughter. From at least the 16th century BC until around 300BC, tens of thousands of animals were killed there in the god's honour.

Human presence at the site goes back more than 5,000 years. There is no sign yet that the cult is as old as that but it is unclear why people should otherwise choose to settle on the barren, exposed summit.

Zeus was god of the sky and thunder, who later became the leader of the classical Greek pantheon.

Pottery found with the human remains dates them to the 11th century BC, right at the end of the Mycenaean era, whose heroes were immortalised in Greek myth and Homer's epics, and several of whose palaces have been excavated.

So far, only about 7% of the altar on Lykaion has been excavated. "We have a number of years of future excavation to go," Romano said. "We don't know if we are going to find more human burials or not."

**Please visit the site: <https://www.theguardian.com/science/2016/aug/10/skeletal-remains-confirm-ancient-greeks-engaged-in-human-sacrifice%20>**

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## **RELIGIOUS CENTER OF HITTITES COMES TO LIGHT**

The 11th archaeological excavation season has recently begun in the ancient city of Nerik, recognized as the religious center of the Hittites, in the northern province of Samsun's Vezirköprü district.

This season the works are being carried out by 30 people, headed by German archaeologist Prof. Rainer Maria Czichon, the head of the Uşak University Archaeological Department.

Czichon said excavations were first initiated in the ancient city 2005, after geophysical exploration.

He said they had deepened the works since 2007 and unearthed various finds, adding, "Since this is a prehistoric era settlement, we find lots of stone and loom artifacts because Anatolia has always been a production place."

The professor said they had also unearthed many mining tools, which were for copper deposits in the Tavşan Mountain field.

He said among the most valuable findings were cuneiform tablets. "Only in this place in Samsun do cuneiform tablets exist. Looking at these findings, we can definitely say that this is Nerik," he added.

Czichon said that Nerik was a Hittite-era city and had relations with Hattusa.

"More than 20,000 tablets have been unearthed in Hattusa in the Central Anatolian province of Çorum. Among them were ones about Nerik. It is mentioned as the religious center of the Hittites... All the kings came here from Hattusa during festivals. They made vows and gave gifts to the god of air. The city was like Mecca and Medina in today's Islam world."

Czichon also said they had also found an inventory list, in addition to the cuneiform tablets.

"The tools used in the shrine are listed. Among them are silver trays and gold god symbols. Of course we don't know where this shrine is but we think that this list belongs to this shrine," he said.

**Please visit the site: <http://www.hurriyetdailynews.com/religious-center-of-hittites-comes-to-light-.aspx?pageID=238&nid=102780>**

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## **SERBIAN ARCHAEOLOGISTS UNEARTH MYSTERIOUS MESSAGES IN ROMAN GRAVES, BY BORIS BABIC**

A large Roman-era necropolis in eastern Serbia has yielded a spectacular find for archaeologists: gold and silver foils asking favours of deities and demons via deceased couriers.

These rare amulets were found in early August in a freshly exposed family tomb at Viminacium, a first-century Roman outpost near a power plant at the small town of Kostolac.

Experts are still trying to understand the messages etched on the small plates, says Miomir Korac, the chief archaeologist.

"Dobrebao. Seneseilam. Sesengemfaranges. We don't recognise these magic words, written in Aramaic using the Greek alphabet," he says. "For all we know, they may have tried to turn stone into gold."

"We're trying, but we may never decipher it."

Messages like these are not rare phenomenon in Viminacium or elsewhere, but are typically found written on lead leaflets, whereas gold and silver were not often used and are found extremely rarely.

"Appeals to otherworldly forces, called katedesmos in Greek and defixiones in Roman, were common. But today we almost exclusively find amulets made of lead," archaeologist Ilija Dankovic says.

They carried spells, written on tablets roughly half the size of a post-it note, then scrolled and sealed within lead capsules.

The amulets were buried in soil or thrown into a river, but also slipped into graves so that the deceased could hand the note to the right deity or demon on the other side.

It was believed that children and murder victims were best messengers, their souls supposedly taking longer before finding rest and with more time to deliver, Dankovic said.

A golden amulet with Greek lettering was found alongside a child's remains in a recently exposed family tomb holding 11 bodies, while another, with a still unexamined silver and gold leaflets, was buried alongside a young woman.

The content of the Viminacium amulets still baffles experts, but previously uncovered tablets carried a wide range of wishes, from the good, to the very evil.

"'Make this man love me' or 'make his body as heavy and dead as this lead' were as common as appeals to some force for luck with their bets on chariot races," Dankovic said.

Roman authorities occasionally banned the spells, worrying that they were dangerous. Viminacium, 60 kilometres east of Belgrade, was a military outpost started in 1st century, though the area had been settled millennia before, as neolithic artefacts indicate.

A military place, laid out for functionality, the garrison and the town that sprang up alongside it were the site of many graves for over 17 centuries, providing great insight into the life of soldiery and civilians of the era.

Particularly precious is the largest-known necropolis from the Roman era, Korac added. "So far we explored 14,000 graves. That's the largest number of Roman Empire graves ever explored and we estimate that there are another 10,000 still under the soil," he explained.

In the early days, unearthed graves were emptied, artefacts stored and the bones perfunctorily examined to determine the sex and age of the deceased.

At Viminacium today, there are around 30 experts, from archaeologists to palaeographers to physical anthropologists, all puzzling together a picture of the past.

"Science advances quickly and now we plan to set up a DNA laboratory and learn ever more from the remains, cremated and buried, as we can," Korac said. -DPA

**Please visit the site: <http://www.gulf-times.com/story/507588/Serbian-archaeologists-unearth-mysterious-messages>**

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## **RECONSTRUCTING BRAIN SURGERY AS IT WAS CONDUCTED AROUND 3,000 YEARS AGO A STUDY SUGGESTS CANNABIS, MAGIC MUSHROOMS AND ECSTATIC DANCING WAS USED AS ANCIENT ANAESTHETIC, BY ANNA LIESOWSKA**

A step by step academic investigation into how Bronze Age medics conducted trepanation operations in Siberia has been conducted based on a male skull found last year in the Nefteprovod II burial ground at Anzhevsky archaeological site, southeast of Kansk in Krasnoyarsk region.

The 'patient' died at the age of between 30 and 40, and archeologists are confident the markings on the ancient bone were from surgical intervention and not ritualistic practices.

They also believe that this man, whose remains were buried with a cranked or crooked knife, lived for a period of time after his surgery. His left parietal bone had an opening with evident signs of bone healing, as well as indications of an inflammatory reaction on the bone plates.

The suspicion is that his eventual death was caused by long term post operative inflammation. This man was not by any means the earliest known case of trepanation in Siberia: there are, for example, some dating to the Neolithic period.

Former surgeon Dr Sergey Slepchenko, now a researcher at the Institute of Archaeology and Ethnography, Novosibirsk, explained that 'the key to successful surgery was the patient's complete trust and confidence that the surgeon had the necessary skills and knowledge to carry out such an operation'.

A critical element was plainly enabling the patient - in this case a male from an unknown ancient culture similar to the Karasuk people, but not one of them - to enter an 'altered state of mind' in which the pain was minimised.

Plants supposed as being used as painkillers in other locations are absent from Siberia, and instead Slepchenko and his colleagues identified flora which were used by indigenous peoples here to used to bring a person to an altered state of mind.

There are an intriguing number of such potential painkillers: for example, some ethnic groups used juniper and thyme in Shamanic practices; the Nivkhi people burned wild rosemary sticks and leaves; northern indigenous peoples used fly agaric mushrooms (*Amanita muscaria*), a powerful hallucinogen.

The 'most obvious', however, was probably cannabis.

But the consumption of fungi, together with other Shamanic practices, such as ecstatic dancing or the use of a drum, is seen as a likely method of altering the conscious state of a patient and so reducing pain to the extent necessary to carry out surgery.

The left parietal bone had an opening with evident signs of bone healing, as well as indications of an inflammatory reaction on the bone plates.

'For the preparatory phase of the operation, we can only use our best guess,' he said. 'However, based on the shape and type of inclination of the edges, we may infer that the patient lay in a supine position with the head turned to the right.

'The surgeon probably stood face-to-face to the patient on the left side. Or the surgeon may have fixed the head with his left arm or between his knees and operated with his right hand.'

Deductions by the team indicate that 'while the surgeon made an incision, an assistant helped by stretching the skin at the edges of the wound, as well as passing instruments and other materials'. The experts believe that it is 'likely' that 'a wide cut to the bone through the skin and underlying tissues was performed', said Dr Slepchenko.

'Such a dissection of the scalp was described in Hippocrates' work' - some 600 years after this Siberian trepanation. 'After the area was cut, the wound would have been opened to organize a 'surgical field'.

### **Cranked knife**

A traditional Karasuk-style knife that was found in the grave, but there was no suggestion this was an implement used for the surgery. Picture: Anton Vibornov

'The skin and aponeurosis were peeled off the underlying bone. The next phase was bone scraping. Changes in bone as a result of healing prevent us from guessing precisely what instrument was used for trepanning or how it was made.

'We cannot definitely state that this operation was carried out with a specialised instrument. Nevertheless, some sort of medical instruments existed in Siberia and were widely used for postmortem manipulations. These same instruments may have been applied for trepanation.'

Dr Slepchenko said: 'Judging by the shape of the hole, I would suggest it was some kind of scraper, rather than a knife. The scraping lasted until dura mater was exposed after which the trepanation area could be enlarged in width but never below.

'The high survival rates after trepanation in early times may be explained by the fact that operations were mostly extradural. Penetration of dura mater causes the development of intracranial hematomas because of bleeding between the meninges.

### **Shaman**

Shamanic practices, such as ecstatic dancing or the use of a drum, is seen as a likely method of altering the conscious state of a patient and so reducing pain. Picture: Vera Salnitskaya

'Subsequent complications, such as wound abscess, meningitis, and brain abscess, lead to death.

'The fact that individuals, including (this patient), lived for some period of time after the trepanation suggests that the dura mater remained intact long enough for strong signs of healing to appear.'

About the operation, he said: 'The opening was covered with skin after trepanation. Some blood filled the area between dura mater and inner surface of the aponeurosis since blood clots prevented further bleeding from the diploe' - the spongy bone separating the inner and outer layers of the compact bone of the cranium.

But the wound 'could not be too tight' to minimise the risk of infection. 'It is not clear if sutures and/or bandages were applied; nor is it clear how the wound was drained. Yet some ethnographic records give evidence that these simple devices were implemented during trepanation.

'One of the most probable and most dangerous complications of trepanation is bleeding which develops immediately after the skin incision. As a consequence of further scraping, bleeding from blood vessels is accompanied by bleeding from the diploe bone.

### **Ancient trepanation**

Examples of Tagar bronze knife stored in Minusinsky local history museum, which are believed to have been used in ancient surgeries. Picture: Tatyana Chikisheva

'It is important that the dura mater remains intact since its damage may cause injuries to the sagittal venous sinus located under its plates. To minimize bleeding and reduce pain, the operation had to be carried out as fast as possible by a presumably highly skilled surgeon.

'It is not clear how they stopped the bleeding.'

Obviously no written records are left but the experts surmise that 'herbs or red-hot objects' were used here.

The Karasuk culture refers to a group of Bronze Age societies from the Aral Sea to the upper Yenisei in the east and south to the Altai Mountains and the Tian Shan around the years 1500~800 BC. The Karasuk were farmers who practiced metallurgy on a large scale. They are considered to be the first people in Siberia who used horses for riding.

Yet the academics believe the brain surgery patient to have been from another grouping from an unknown culture with a similar lifestyle.

The grave in which the trepanned skull was found - had been robbed in ancient times. Little more than the skull remained but there were additionally fragments of tubular bones of the upper limbs and of ribs.

A traditional Karasuk-style knife that was found in the grave, but there was no suggestion this was an implement used for the surgery. Two stone arrowheads were also located.

The study on this reconstruction of trepanation is published in the International Journal of Osteoarchaeology.

The archaeological excavations and the study of the finds was possible thanks to the quick and professional work of the Security and Rescue Archaeology Department in the Institute of Archaeology and Ethnography, Siberian Branch of Russian Academy of Sciences.

The archaeologists who took part were: Dr Anton Vibornov, Dr. Vyacheslav Slavinsky, Dr Alexander Tsybankov.

Dr Slepchenko is a researcher at the Security and Rescue Archaeology Department, at the Institute of Archaeology and Ethnography, part of the Siberian Branch of Russian Academy of Sciences.

**Please visit the site: <http://siberiantimes.com/science/casestudy/features/f0250-reconstructing-brain-surgery-as-it-was-conducted-around-3000-years-ago/> [Go there for pix and map]**

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## **NEW MYCENAEAN FIND FROM SW BULGARIA**

An almost complete Mycenaean vessel, an alabastron used as a container for ointments, was found this summer in a Late Bronze Age (13th cent. BCE) settlement in Southwestern Bulgaria. Mycenaean pottery has only very rarely been found in Bulgaria so far.

The find sheds new light on the relations between the southern Bulgarian mountain regions and the urban centers in the Aegean at the time of the Mycenaean palaces.

The strongly fortified settlement of Bresto, on the territory of the modern village Banya, municipality of Razlog, is currently excavated by archaeologists from the Ludwig-Maximilians-University Munich and the New Bulgarian University Sofia. Thanks to the support of the Balkan Heritage Foundation, students from the USA, Great Britain and Australia take part in the research.

The fortified settlement of Bresto is located on a hill slope, surrounded by a river bend of a tributary of the Mesta/Nestos river. The Mycenaean vessel was found in a small passage next to a huge building with an apsidal ending.

The research at Bresto aims at a better understanding of the wealth and far-distance relations of this strongly fortified settlement located between the mountains of Rila, Pirin and Rhodopi. These long-distance connections of Bresto are also indicated by a boar tusk plate, which was probably prepared for the production of an Aegean-type helmet.

The massive stone fortification wall in Bresto has no parallels in Western Bulgaria and Northern Greece so far. The closest resemblance of the offsets of the wall from Bresto can be found in the sixth settlement of Troia.

In the near future, the Bresto project will undertake organic residue analysis in order to clarify the contents of the Mycenaean vessel.

Project Directors: Ass.-Prof. Bogdan Athanassov (NBU Sofia), Prof. Dr. Philipp W. Stockhammer (LMU München)

Funding and logistic support: New Bulgarian University, Heidelberg University, LMU Munich, Balkan Heritage Foundation, Institute for Field Research, Bulgarian Ministry of Culture, Municipality of Razlog and Banya, Valeks Group 2 in Razlog, St. Paisii Hilendarski School in Banya.

## **AN IMPORTANT DISCOVERY RECENTLY MADE BY ROMANIAN ARCHAEOLOGISTS IN THE ROMAN SETTLEMENT OF POROLISSUM SHOWED ONE OF THE BIGGEST PUBLIC BUILDINGS FROM DACIA ROMANA**

The team, led by roman-specialized archaeologist Coriolan Opreanu unearthed elements from a monumental entrance of what, most probably was a roman basilica situated close to the Salaj Municipium Piazza forum.

The discovery comes after a prospection campaign of an area of about 10 ha from Porolissum Archaeological Complex, especially on the section where is supposed to be the ancient Roman Municipium Septimium Porolissense; ,, last year was identified a monumental building from Roman Empire period measuring 40 m / 20 m; the walls, width 1,4 m (1.5 m on base), deep up to 2.5 m, strengthened by buttresses on one of the sides that proves the building was very tall and massive. We discovered 15 cm long nails or even longer that suggest the massiveness of the beams sustaining the roof. It is obvious that the building is a covered large, even gigantic one that probably functioned as a basilica" declared Saturday, August 20th 2016 Prof. doctor habilitatis Coriolan Opreanu, Dep. Head of Archaeology and History of Arts of Cluj-Napoca / Romanian Academy.

The monument was built in the last period of peace of Roman Empire during the reign of Severus Alexander Emperor, 222-230 A.D. There are elements and coins the demonstrate that building haven' t survived until the end of roman domination. It collapsed sometimes between 250 and 260 A.D. On the ruins of that building people lived 10-15 more years.

„We had the chance to discover these days, on the longer side, a relatively well preserved entrance formed by two corridors, all around presenting elements of architecture carved in chalk that suggest it was a monumental entrance, a kind of triumphal arch. We found Corinthian capitals made of local stone type of gresia (...) It is very important, because the entrance of this building obvious led to a place that could be the street, but since the researches demonstrates there are no other buildings nearby and there must be a bigger discovered space, a kind of plaza. It is very probable to be the forum's plaza" said Opreanu.

A basilica was one of the most important and largest architectural buildings of a roman town, usually on two levels. It was situated near the forum, in fact, together with the forum it creates an ensemble dedicated to meetings of the citizens of a roman town. During the summer, in the forum people would have political debates, commercial transactions, (...); the same thing happened in a basilica should stormy weather prevent the use of the forum.

Porolissum's archaeological reservation is one of the biggest and well-preserved archaeological sites in Romania. It was established as a border military center in 106 by roman emperor Trajan to defend the main pass from Carpathian Mountains (Meses) to Dacia Porolissensis. After a few decades, Porolissum evolved into to an important commercial center that facilitated commercial exchanges between romans and "barbarians" Its prosperous existence lasted about one thousand years after roman withdrawal from Dacia (270 A.D.)

Please visit the site: <http://stirileprotv.ro/stiri/social/descoperire-arheologica-importanta-in-salaj-in-fostul-oras-roman-porolissum-cel-mai-mare-edificiu-public-din-dacia-romana.html> [Translated from the Romanian by Laurentiu Ganea: [archae7loggia@gmail.com](mailto:archae7loggia@gmail.com)]

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## **HUNGARY: UNEARTHING SULEIMAN THE MAGNIFICENT'S TOMB SMALL HUNGARIAN TOWN HOPES DISCOVERY OF OTTOMAN SULTAN'S TOMB WILL BRING MUCH NEEDED VISITORS AND REVIVAL, BY DAN MCLAUGHLIN**

Szigetvar, Hungary - For as long as anyone in Szigetvar can recall, Turbek Hill on the edge of this town in southern Hungary has been a peaceful tangle of orchards and vineyards.

But now, Turbek's earth is yielding the secrets of a turbulent past, and drawing presidents, professors and, potentially, a lucrative stream of pilgrims and tourists to a place where extraordinary events shaped Europe's history.

Hungarian and Turkish researchers working here believe that they have found the tomb of Suleiman the Magnificent, the greatest ruler of the Ottoman Empire, who died at Szigetvar in early September 1566 - almost 450 years ago.

Hungarian men recreate a fight between 16th-century Ottoman and Habsburg soldiers at Szigetvar castle, where the two empires' troops clashed 450 years ago [Dan McLaughlin/Al Jazeera] Suleiman's last haven

Suleiman succumbed to natural causes two months before his 72nd birthday, and only hours before his vast army finally overcame the Habsburg defenders of Szigetvar castle following a brutal and bloody siege.

The victory was pyrrhic, however: So heavy were the Ottoman losses that they abandoned their effort to take Vienna, an outcome that later prompted French diplomat Cardinal Richelieu to call Szigetvar "the battle that saved civilisation".

Fearing the reaction of troops to the death of a sultan, who had ruled for four decades, Suleiman's aides kept his demise secret and smuggled his corpse back to Constantinople for burial at the Suleymaniye Mosque that he had commissioned.

But the weather was hot and the road home was long, so Suleiman's heart and other organs were removed here and, as legend has it, interred in a golden coffin beneath his last encampment.

As the Ottomans entrenched their rule here through the 1570s, and a growing number of travellers came to visit Suleiman's shrine, a mosque, a Dervish cloister and barracks grew up around the site, and it developed into a settlement known as Turbek - derived from the Turkish word "turbe", which means tomb".



When the Habsburgs retook the area in the 1680s, however, they razed this symbol of Ottoman conquest to the ground, and over subsequent centuries the location of Suleiman's tomb became the stuff of rumour, speculation and legend.

### **Signs of Ottoman ruins**

For Norbert Pap, a professor of geography in the nearby university town of Pecs, neither supposed site rang true.

One theory holds that the 18th-century Turbek church now occupies the place where the tomb stood, while another puts it close to where a Hungarian-Turkish Friendship Park was established in 1994 to mark the 500th anniversary of Suleiman's birth.

"When we started this work in 2012, we analysed lots of old sources, looked at land use and local geography, and tried to reconstruct the landscape of that time," Pap recalled.

"We realised the location must be totally different to where the church and the Friendship Park are - we thought the real place must be higher and further away from Szigetvar castle."

The Szigetvar church, which was one of the sites where, until recently, the heart of Suleiman the Magnificent was thought to have been buried 450 years ago [Dan McLaughlin/Al Jazeera] Contemporary chroniclers said Suleiman's imperial tent sat on a rise overlooking the battlefield and besieged fortress; the church and park enjoy no such views, and would have been on hotter, marshier ground than Turbek Hill.

"People here realised there was something here because when they were planting a tree, they would sometimes hit bricks," Pap explained, as insects hummed through the flower-strewn vines and orchards that surround his team's excavations.

"Occasionally, archaeologists worked here. In the early 1970s, they excavated what we now think is a corner of the tomb. They said it was 'some kind of Ottoman public building - more research needed'."

With state funding from Hungary and Turkey, Pap and his team began digging on the hill, and soon found clear signs of Ottoman ruins.

"It was Christmas 2014 when I got the results of the geophysical survey ... I was sure this was the right place. It showed big walls under the surface, directed towards Mecca."

Turkish colleagues share Pap's certainty and excitement about the site.

"The findings of the surveys done before the excavations were so clear that it was like cleaning sands over a partially visible subterranean wreck ... We were all joyful for sure," said Ali Uzay Peker, a professor of architectural history at Ankara's Middle East Technical University.

"Last year, the foundation of a square building was unearthed and identified as the tomb of Suleiman. This year, the mosque and tekke [a Dervish cloister] were excavated," he explained.

"Tools of [16th-century] daily use like coins, knives, potsherds, pipes; architectural fragments ... and the layout of the buildings in relation to each other support written and pictorial documentation and technological analyses. So we can say that we unearthed Sultan Suleiman the Magnificent's tomb."

After taking power in 1520, Suleiman extended Ottoman rule across the Middle East, North Africa and the Balkans. By 1566, his dominions stretched from Mecca to Algiers to most of modern Hungary. At home, his creation of a legal code saw him dubbed "the Lawgiver" or "Legislator".

For Peker, Suleiman is "a symbol of Ottoman magnificence.

"He was a triumphant ruler, and at the same time a great patron of literature, arts and architecture. The age of Suleiman was an apogee in the history of Turkish art. So one can estimate how important this discovery is for the Turks," he said.

### **Important visitors**

Turkish President Recep Tayyip Erdogan - who has been dubbed a "neo-Ottoman" due to his reverence for the nation's imperial past and desire to extend its geopolitical influence - plans to attend a commemoration in Szigetvar on September 7.

He will join Hungarian and Croatian leaders - the Habsburg forces who defended Szigetvar to the end were mostly Croats - for the climax of the 450th-anniversary events that are both thrilling and daunting for the town of 10,000 people.

"Mr Erdogan came here before and brought three helicopters. And then he was only prime minister and there hadn't just been an attempted coup," said Robert Fazekas, the vice president of the local county assembly.

The task of hosting three presidents, their aides and security personnel - as well as possibly tens of thousands of other visitors during the anniversary week - is a far cry from Fazekas' usual work in the struggling backwater that is Baranya county.

"We have a lot of joblessness and no big employers in this area. There's some work in a canning factory, in auto parts and in agriculture, but many young people go to Western Europe to find a job," he said.

"The discovery of Suleiman's tomb is absolutely positive for us, and I hope it will help Szigetvar and the whole country to develop. Tourism could become our main sector, but we need new hotels and other things. And of course, we are absolutely open to Turkish investment."

It is unclear, however, how many Turks or other Muslims would be happy to invest in, or even visit, a country whose leader is accused of fomenting Islamophobia.

Hungary's Prime Minister, Viktor Orbán, built fences on its southern borders last year - only 30km from Szigetvar - to keep out mostly Muslim refugees whom he has repeatedly called a direct threat to Europe's security, culture and identity.

Report: Hungary 'breaking all the rules' with refugees

He derides German-led plans to distribute refugees around the European Union and has called a referendum on the issue for October, saying Hungarians have the "right to decide that we do not want a large number of Muslim people in our country."

"I have to say," Orban declared, "that when it comes to living together with Muslim communities, we are the only ones who have experience because we had the possibility to go through that ... for 150 years."

Orban's depiction of Ottoman rule as a national catastrophe reflects the standard Hungarian view, even though his Protestant compatriots of the time lived comfortably under the sultans and saw the Catholic Habsburgs as the main enemy.

"In general, from the government side, the Suleiman story is very sensitive. We can feel there are concerns about Turbek becoming a kind of Muslim holy place and pilgrimage centre," said Pap.

"At the same time, the government has given lots of money for research and local people are very positive. We Hungarians have 600 years of shared history with the Turks - for the first three centuries we fought, and during the last three we have often been allies. It is not just a history of troubles."

For all their negative associations with the Ottoman period, many Hungarians are still captivated by the sultan's court as depicted in Szulejman, a lavish Turkish soap opera that is wildly popular here.

It cannot hurt the profile or popularity of Pap's research, then, that two real Ottoman "princesses" recently visited Turbek, where the heart of their glorious ancestor was reputedly buried.

Kenize Mourad, a French writer who is a great-granddaughter of Sultan Murad V, and her cousin, Mediha, gave hair samples to researchers to allow DNA matching of any human remains found during excavations.

"When they showed us the exact place ... I could not resist the emotion, nor suppress my tears. I raised my hands and prayed for Sultan Suleiman - the Legislator, the Magnificent - asking God to help Turkey in her difficult situation," said Mourad.

"Of course, there is very little chance that after 450 years there would be any trace of our ancestor," she acknowledged.

"But if, as they say, his heart and internal organs stayed in this place, then maybe ..."

**Please visit the site: <http://www.aljazeera.com/indepth/features/2016/08/hungary-unearthing-suleiman-magnificent-tomb-160814120849950.html> [Go there for pix]**

## **EXCAVATION OF PHILISTINE GATH FINDS STARTLING SIMILARITIES TO CYPRIOT CITIES METAL WORKING TECHNIQUES ALIEN TO CANAAN AND GATH'S DEVELOPMENT AFTER PHILISTINE ARRIVAL PROVIDE MORE CLUES AS TO THEIR ORIGIN, BY PHILIPPE BOHSTROM**

New discoveries reveal that the Philistine cities of ancient Israel were laid out like Bronze Age cities in Cyprus, unlike the haphazard structure of the surrounding Canaanite towns. Also, archaeological investigation in Philistine Gath itself found metal-smelting technologies alien to Canaanite traditions, but akin to techniques found in Cyprus of thousands of years ago.

Those and other discoveries bolster the theory of an Aegean origin for the Philistines, who dwelled along the coast of what is Israel today between about 1200 to 600 BCE.

The Mediterranean basin area had been under Mycenaean Greek influence from around 1450 BCE to around 1200 BCE. But around that time, 3200 years ago, the ancient civilizations around the Mediterranean basin badly weakened - and the Sea Peoples arose. Archaeological evidence indicates that at least some of them rose up from Cyprus, spreading powerfully throughout the region and settling along mainland Greece, the Mediterranean islands and the coast of today's Israel.

The Gath excavation also found the remains of what seems to be a monumental city gate, dating to the 11th century BCE. The gate would probably have been roofed and the interior space would have been divided into multiple internal rooms. It was built using large slabs of local stone piled onto stone and mud brick foundations in cyclopean format (a technique to build walls by piling up rocks, without mortar).

"The pottery indicates that this might be the earliest chambered gate in the Levant," Aren Maeir, director of the Ackerman Family Bar-Ilan University Expedition to Gath told Haaretz, adding, "It may well be that the whole idea of chambered gates came from Philistia."

The excavators also found two olive presses, or possibly wine presses, from the 9th century BCE, and hundreds of artifacts.

Gath is located inland, on the border between Philistia, which runs along the southern coastal plain, and the Judean foothills. The archaeologists also found the ruins of towers and long stretches of fortification walls, which had rested unseen for more than 3000 years in the ground, but now reveal the true scale and might of fortified Gath.

**Where King David went mad**

Archaeological evidence indicates that the site of Gath had been settled by Canaanites as early as 5,000 years ago, in the 4th millennium BCE (Early Bronze Age). But by the time the Iron Age began around 3200 years ago, the city had changed hands and shape.

Wherever they came from, by around 1200 BCE, the Philistines - counted to be among the "Sea Peoples" - that had arrived on the southern coastal plain of Israel. During the era of Philistine control over Gath, from around 1200 to 600 BCE, the city grew beyond its Canaanite origins.

From the onset, Gath was clearly a focus of the Philistine regional power: it was the biggest city in Philistia, says Aren Maeir, possibly even in the whole region. The lower city of Gath reached a vast 40 hectares during the Philistine era, he estimates.

Stone towers on both sides of the gate guarded the entrance to the city. A wall stretching at least 200 meters in length running by the Elah River, to deter would-be attackers, shows just how powerful the city was some 3100 to 2900 years ago.

Gath's gate is famously mentioned in the Bible (1 Samuel 21:17) as the place to where David fled from Saul. His identity suspected, David feigned insanity, and the king of Gath let him go: "When the servants of Achish the king of Gath began to say: Is not this David the king of the land? David became afraid and feigned insanity, making marks on the doors of the gate and letting his saliva run down his beard" (1 Samuel 21:10-15).

### **Cypriot town planning in Philistia**

The Philistine cities of Gath, Ekron, Ashdod and Ashkelon seem to have less in common with other nearby towns in the Levant than with cities in ancient Cyprus. Certain cities in Mycenaean Greece also bear telltale marks of Philistine influence.

For one thing, after the arrival of the Sea Peoples, these cities in Philistia and Mycenaean Greece vastly expanded based on what seems to be zoning plans, based on, for instance, industrial and residential areas.

Across the Mediterranean from Israel, another city to follow that pattern was Tiryns, a Mycenaean Greek city that suddenly expanded massively in the 13th century BCE, about 100 years before Gath's rise. It too grew in the Cypriot style, Prof. Joseph Maran of the University of Heidelberg told Haaretz. This was happening at a time that other hubs of ancient Greece were being abandoned or shrinking.

Tiryns' lower town had been planned and built from scratch along the lines of the Cypriot towns of Enkomi and Kition, Maran says.

"What we have in Tiryns are clear signs of relations to Cyprus, Italy and perhaps the northern Levant. There is a certain likelihood that people from southern Greece took part in the population movements of the Sea Peoples," Maran told Haaretz.

The bottom line is that the Philistines seem to have been one of the Sea Peoples, and wherever they originated, at least a large group of them spread from Cyprus starting around 3300-3400 years ago, settling around the Mediterranean basin. It's hard to pinpoint the Philistines' exact origins, since these "Sea Peoples" were a very mixed bunch

who merged various cultural traditions. But some of their cultural origins clearly derived from the Aegean Bronze Age cultures (such as Greek Mycenaean, Minoan and Cypriot cultures): we see similarities in ceramics, technology, architecture, burial customs, and pottery remains with writing -in non-Semitic languages, all dating to 1150-1000 BCE.

Pottery sherds with Cypro-Minoan script, which was used extensively on Cyprus, have also been found in Tiryns and Ashkelon, as well as in Ugarit, on the Syrian coast. But there were clearly other influences on early Philistine culture, such as from Italy and probably ancient Turkey too.

### **The Canaanite influence**

Meanwhile, what we find of Philistine culture shows traces of persisting Canaanite customs too. Philipp Stockhammer from Ludwig-Maximilians-Universität München, for one, is convinced that the Philistines originated in the Aegean and took on local customs after their arrival in the southern Levant.

Philistine feasting dishes are of Aegean type but hardly a copy of the Aegean's fine dining ware, he says. "The Philistine feasting dishes are nothing but a translation of the local Canaanite idea into the Aegean style," Stockhammer told Haaretz, adding: "The Philistines feasted like the Canaanites."

Curiously, the famous Cypriot stirrup jar, which had been wildly popular in ancient Israel, based on the number of them found in tombs in Megiddo and Beit -She'an is rarely found in Philistia - or in Cyprus, though chemical analysis of the clay proves they were made in Cyprus, Stockhammer says. "Certain vessel shapes were produced in Greece, only to be exported to the East," he says.

Ultimately, Maeir also believes the early Philistine culture was "entangled" - comprising a variety of influences, foreign and local, certainly after they had mixed with the local Canaanites over the generations.

### **Tell-tale horned altars**

The recent discovery in Philistine Gath of an unusual altar with only two horns, rather than the Judahite norm of four, may also hint at Aegean origin for the Philistines.

Two-horned motifs on buildings, and altars, were common in Minoan Crete (and one was found in Cyprus too). Louise Hitchcock of the University of Melbourne thinks the Philistines brought over the horned altar motif from Minoan representations of the horns of the sacred bull.

Also, recently a metalworking facility was discovered in Gath, where both bronze and iron was produced by methods that were not Canaanite. "We may be dealing with a different metalworking practice that may hint at a non-local tradition," Maeir said.

The Bible itself says the Philistines came from "Caphtor" - which seems to be the region of ancient Crete and/or Cyprus. It could yet turn out that at least some of them did.

[URLs and captions for the illustrations accompanying the article.]

Please visit the site: <http://www.haaretz.com/jewish/archaeology/1.738150> [Go there for pix]

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## **SECRET TUNNEL FOUND IN HITTITE CAPITAL**

Archaeological works in Alacahöyük, one of the most important centers of the Hittite Empire and considered Turkey's first "national excavation field," have unearthed a 2,300-year-old secret tunnel known as a potern.

"This tunnel is a big discovery in terms of Hittite architecture. This is my 55th year in professional life. I never thought I would find a potern but I did," said Ankara University Professor Aykut Çınaroğlu, the head of the excavations.

Çınaroğlu said they opened the season one month ago with a team of 24 people, including eight archaeologists, and were set to continue until the end of September.

While focusing on a sanctuary that was unearthed in 2014, they discovered a secret tunnel, he said.

Stating that more than one secret tunnel existed in the capital of the Hittites, Hattuša, Çınaroğlu said: "This new potern proves the existence of other poterns in Alacahöyük. We are carrying out excavations right now; we have not finished yet. We started from the gate opening to the sanctuary, trying to open it. This is a potern from nearly 2,300 years ago. We have dug 23 meters so far but think that it is longer. Cleaning work is continuing, too. We will see what we will find in the end. Poterns were placed under the castle, extending into the city. We have previously found a cuneiform tablet here, featuring a king who explains to priests what to do during ceremonies. This secret tunnel might have had a sacred function."

### **An exciting discovery**

Noting that the secret tunnel was an "exciting discovery," Çınaroğlu said, "We are focusing on this place this season."

The Bronze Age had had a powerful effect on Alacahöyük, he said. "The best artwork of this effect is the Hatti era, which was 350-400 years before the Hittites. In the future, we will start working on this layer because this land has many questions about the Bronze Age that need to be answered. We have so far excavated in very limited areas, but we will try to progress and reach this age with more scientific methods."

The first excavation in Alacahöyük, known as the religious capital of the Hittites, was first carried out by Ottoman archaeologist Makridi Bey in 1907.

The works restarted in 1935 and have been continuing since then based on an order by Turkey's founding father, Mustafa Kemal Atatürk, and some funds he provided.

[URL for the picture accompanying the article.]

**Please visit the site:**



<http://www.hurriyetdailynews.com/.aspx?pageID=238&nid=103034&NewsCatID=375> and  
[http://www.hurriyetdailynews.com/images/news/201608/n\\_103034\\_1.jpg](http://www.hurriyetdailynews.com/images/news/201608/n_103034_1.jpg)

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## **ONE OF THE MOST SIGNIFICANT** **ETRUSCAN DISCOVERIES IN DECADES** **NAMES FEMALE GODDESS UNI**

One of the longest Etruscan texts ever found, the inscription's mention of Uni may indicate she was patroness of the Poggio Colla cult, with stone's language spelling out ceremonial religious rituals

Archaeologists translating a very rare inscription on an ancient Etruscan temple stone have discovered the name Uni - an important female goddess.

The discovery indicates that Uni - a divinity of fertility and possibly a mother goddess at this particular place - may have been the titular deity worshipped at the sanctuary of Poggio Colla, a key settlement in Italy for the ancient Etruscan civilization.

The mention is part of a sacred text that is possibly the longest such Etruscan inscription ever discovered on stone, said archaeologist Gregory Warden, professor emeritus at Southern Methodist University, Dallas, main sponsor of the archaeological dig.

Now Etruscan language experts are studying the 500-pound slab - called a stele (STEE-lee) - to translate the text. It's very rare to identify the god or goddess worshipped at an Etruscan sanctuary.

"The location of its discovery - a place where prestigious offerings were made - and the possible presence in the inscription of the name of Uni, as well as the care of the drafting of the text, which brings to mind the work of a stone carver who faithfully followed a model transmitted by a careful and educated scribe, suggest that the document had a dedicatory character," said Adriano Maggiani, formerly Professor at the University of Venice and one of the scholars working to decipher the inscription.

"It is also possible that it expresses the laws of the sanctuary - a series of prescriptions related to ceremonies that would have taken place there, perhaps in connection with an altar or some other sacred space," said Warden, co-director and principal investigator of the Mugello Valley Archaeological Project that made the discovery.

Warden said it will be easier to speak with more certainty once the archaeologists are able to completely reconstruct the text, which consists of as many as 120 characters or more. While archaeologists understand how Etruscan grammar works, and know some of its words and alphabet, they expect to discover new words never seen before, particularly since this discovery veers from others in that it's not a funerary text.

The Mugello Valley archaeologists are announcing discovery of the goddess Uni at an exhibit in Florence on Aug. 27, "Scrittura e culto a Poggio Colla, un santuario etrusco nel Mugello," and in a forthcoming article in the scholarly journal Etruscan Studies.

Text may specify the religious ritual for temple ceremonies dedicated to the goddess. It's possible the text contains the dedication of the sanctuary, or some part of it, such as the

temple proper, so the expectation is that it will reveal the early beliefs of a lost culture fundamental to western traditions.

The sandstone slab, which dates to the 6th century BCE and is nearly four feet tall by more than two feet wide, was discovered in the final stages of two decades of digging at Mugello Valley, which is northeast of Florence in north central Italy.

Etruscans once ruled Rome, influencing that civilization in everything from religion and government to art and architecture. A highly cultured people, Etruscans were also very religious and their belief system permeated all aspects of their culture and life.

Inscription may reveal data to understand concepts and rituals, writing and language. Permanent Etruscan inscriptions are rare, as Etruscans typically used linen cloth books or wax tablets. The texts that have been preserved are quite short and are from graves, thus funerary in nature.

"We can at this point affirm that this discovery is one of the most important Etruscan discoveries of the last few decades," Warden said. "It's a discovery that will provide not only valuable information about the nature of sacred practices at Poggio Colla, but also fundamental data for understanding the concepts and rituals of the Etruscans, as well as their writing and perhaps their language."

Besides being possibly the longest Etruscan inscription on stone, it is also one of the three longest sacred texts to date.

One section of the text refers to "tinaś," a reference to Tina, the name of the supreme deity of the Etruscans. Tina was equivalent to ancient Greece's Zeus or Rome's Jupiter.

Slab was once an imposing and monumental symbol of authority. The slab was discovered embedded in the foundations of a monumental temple where it had been buried for more than 2,500 years. At one time it would have been displayed as an imposing and monumental symbol of authority, said Warden, president and professor of archaeology at Franklin University Switzerland.

The text is being studied by two noted experts on the Etruscan language, including Maggiani, who is an epigrapher, and Rex Wallace, professor of classics at the University of Massachusetts Amherst, who is a comparative linguist.

A hologram of the stele will be shown at the Florence exhibit, as conservation of the stele is ongoing at the conservation laboratories of the Archaeological Superintendency in Florence. Digital documentation is being done by experts from the architecture department of the University of Florence. The sandstone is heavily abraded and chipped, so cleaning should allow scholars to read the inscription.

Other objects unearthed in the past 20 years have shed light on Etruscan worship, beliefs, gifts to divinities, and discoveries related to the daily lives of elites and non-elites, including workshops, kilns, pottery and homes. The material helps document ritual activity from the 7th century to the 2nd century BCE.

Besides SMU, other collaborating institutions at Mugello Valley Archaeological Project include Franklin and Marshall College, the University of Pennsylvania Museum of Archaeology, the Center for the Study of Ancient Italy at The University of Texas at Austin, The Open University (UK), and Franklin University Switzerland. - Margaret Allen, SMU

Please visit the site: <http://blog.smu.edu/research/2016/08/24/one-of-the-most-significant-etruscan-discoveries-in-decades-names-female-goddess-uni/> [See also <http://www.dailymail.co.uk/sciencetech/article-3758499/Did-Etruscans-follow-fertility-cult-Inscribed-stone-slab-reveals-mysteries-ancient-Italian-civilisation.html>]

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## **ARCHEOLOGISTS DISCOVER 4,200 YEAR- OLD RATTLE IN CENTRAL TURKEY**

A 4200-year-old toy, equivalent to today's rattle, has been discovered at the Achemhöyük excavation site in Yeşilova, Aksaray. The toy dates back to the early Bronze Age.

Prof. Dr. Aliye Öztan, the excavation leader at the Achemhöyük site in central Turkey, said the rattle toy is one of the most interesting artifacts to be found at Achemhöyük this year. The terra-cotta toy was found in a layer dating back to 2200 BC. It's shaped like a bag, and probably used to have a handle.

Archeologists discover 4,200 yr-old rattle in central Turkey The toy is sealed but has tiny ornaments, probably small pebble stones, inside, which produce a noise when it's shaken. The 4200-year-old rattle is one of the oldest examples of today's plastic toys.

Öztan explained the aim of their excavations saying: "We want to examine layers of the early Bronze Age together with the older layers, because this site has a city wall dating back to the early Bronze Age."

As well as the toy, which was found in the seventh layer, a piece of necklace made out of bones, metal needles, and cups have also been found in different layers.

Please visit the site: <http://www.dailysabah.com/history/2016/08/26/archeologists-discover-4200-yr-old-rattle-in-central-turkey> [Go there for pict]

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## **TRACING ISTANBUL'S ROMAN, OTTOMAN ROOTS BACK TO 7 HILLS**

Old Istanbul or Constantinople was built on seven hills, which are not very well-known even among modern city inhabitants. Each hill has historic importance, bearing the footprints of the Roman and Ottoman empires

Glamour is what all great empires of the world used to show off their power, intimidating enemies by designing ravishingly beautiful buildings and monuments. For Roman and Ottoman emperors, the old city of Istanbul was a symbol of grandeur with architectural masterpieces built on the highest point of each of the city's seven hills, which would become the iconic symbols of the empire and inspire many poets and authors for centuries.

Constantine the Great was so impressed by this city that it didn't take him much time to decide to establish his new capital city there - the city of Constantinople. The emperor took inspiration from the seven heavenly bodies the Babylonians had already spotted - the sun, the moon and five planets - establishing the city - also called "Nova Roma" (New Rome) - on its seven hills. Both the Byzantine and the Ottoman empires protected the city's borders and designed impressive and monumental buildings on each of the seven hills, six of which lie along the Golden Horn and the seventh located one kilometer south of the Golden Horn.

However, these seven hills of Constantinople (today's Istanbul) are not well known by locals. There is even a common misunderstanding among those who attempt to identify the hills, mistaking Çamlıca Hill for one of the hills, for example. Indeed, the seven hills all lie within the ancient city walls, as the area stretching beyond these walls is not considered as Constantinople, according to former Hagia Sophia Museum head Haluk Dursun. The hills stretch from the city's acropolis all the way to the district of Edirnekapı. So what do these hills represent and where are they exactly?

### **First Hill**

The first hill is known as the heart of Constantinople where the imperial authorities all settled. The hill stretches up from the cape of the historical peninsula to an altitude of about 30 to 40 meters above sea level where Mehmed the Conqueror built hill houses for Topkapı Palace in 1478. In both the Byzantine and Ottoman eras, this hill was chosen as the main settlement for the royal family. Topkapı Palace, the Sultanahmet Mosque, the Istanbul Archaeology Museum, the Cağaloğlu Bath House and the historic Sirkeci Train Station, along with the Million Stone and İbrahim Pasha Palace, which currently serves as the Turkish and Islamic Arts Museum, and the ancient ruins of the Byzantine Palace of Boukoleon are all located there.

### **Second Hill**

Stretching about 10 meters higher than the first, the second hill is also home to a number of historic buildings, all of which extend along the Mese, Constantinople's main thoroughfare. Today, the area is a hot tourist spot where the Firuzâğa Mosque, the Grand Bazaar, the Çemberlitaş Bath House, the Çorlulu Ali Pasha Madrasa and the Spice Bazaar are located.

### **Third Hill**

One of the most eye-catching hills in terms of geographical structure, the third hill reaches an altitude of 60 meters and has one of the city's highest ridges. In the Byzantine era, Constantine the Great built a forum here that was later rebuilt and renamed the Forum of Theodosius by Emperor Theodosius I. A Mimar Sinan architectural masterpiece, which dates back to 1557, the Süleymaniye Mosque is the most striking building on this hill. Istanbul University, Beyazıt Mosque, the Çukurçeşme Bath and the Süleymaniye Social Complex and Zeyrek Mosque, which used to be the Pantokrator Church, are other historic sights worth visiting.

### **Fourth Hill**

One of the highest points in the old city, this hill inspired Ottoman and Byzantine emperors to build prestigious architectural structures, including Fatih Mosque and the Aqueduct of Valens, a major system that provided water to the Romans of Constantinople. Dedicated to 12 Christian apostles, the Church of the Holy Apostles, which used to stand on this hill, was used by the Ecumenical, the patriarch of the Greek Orthodox Church, before it was abandoned by the patriarch and replaced by Fatih Mosque during the Ottoman era.

### **Fifth Hill**

The fifth hill of Istanbul was once known for the Pammakaristos Monastery where the Museum of Conquest (Fethiye Müzesi) now lies. In 1591, the monastery was converted into a mosque, which now partly serves as a museum and where tourists can visit the Yavuz Sultan Selim Mosque, and the Chora Museum, which has dazzling frescos.

### **Sixth Hill**

Lying behind the fourth hill, the city's sixth hill is 70 meters high. Mihrimah Mosque, presumably the most significant building on this hill, is located in Edirnekapı. The mosque is dedicated to the favorite daughter of Suleiman the Magnificent and Hürrem Sultan, Mihrimah Sultan by Mimar Sinan who was said to have unrequited love for her. Tekfur Palace, the only remaining building from the Byzantine-era Blachernae Palace Complex, is also on this hill.

### **Seventh Hill**

The city's last hill is separated from the others by a deep valley. Sixty meters in height, the hill used to be home to the Arkadius Forum built in 403 and was marked by the Arkadius Pillar in the Byzantine era. In Ottoman times, Hürrem Sultan's social complex and mosque were built here.

Please visit the site: <http://www.dailysabah.com/feature/2016/08/25/tracing-istanbuls-roman-ottoman-roots-back-to-7-hills>

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## **ELABORATELY TATTOOED MUMMY BRINGS ARCHEOLOGISTS TO TEARS ONLY ABOUT 12 TATTOOED MUMMIES HAVE BEEN FOUND TO DATE, WITH SIMPLE TATTOOS MADE OUT OF LINES AND DOTS, BY ELYSHA ENOS**

A Quebec researcher is celebrating the discovery of an intricate collection of tattoos found on the mummified body of a woman who lived more than 3,300 years ago.

The markings are the first on a mummy from dynastic Egypt to show actual objects, including lotus blossoms on the mummy's hips and cows on her arm, the scientific journal Nature reported.

Cédric Gobeil has been leading a team of experts in Egypt since 2013. They announced the discovery in April.

When Gobeil looked at the dark spots on the mummy, he was shocked by what he saw.

"In that first second I was so excited that I cried," Gobeil told CBC's Quebec AM.

"It's so striking. You don't search for that and once you see it you can't even imagine."

According to Gobeil, about a dozen other mummies have been found with tattoos of simple shapes, usually around the belly, which would be thought to offer magical protection during pregnancy.

None of those more common tattoos appear on this mummy. More than 30 images of animals appear on the torso and arms.

The researchers believe the mummy is of a woman between the ages of 24 and 35 years old who may have been a priestess to the Egyptian goddess Hathor.

Though Hathor is the goddess of many things, Gobeil said, her connection to the dead is what links her with this mummy.

### **Almost overlooked**

The black markings on the mummy's body were nearly disregarded as residue from the mummification process.

Thanks to modern imaging software, Gobeil said his team was able to unshrink and extend the mummy's skin, which is when they saw the striking tattoos.



As they scanned the body with an infrared camera, they even found tattoos which weren't visible to the naked eye.

"Some parts of the body are so dark and covered in embalming product that it's impossible to see the skin," Gobeil said. "So using an infrared camera, it sees through layers and sees skin as it was."

Gobeil added that this discovery dispels the idea Egyptologists previously had about priestesses being painted with animal imagery, not tattooed.

Inside some tombs there are walls with depictions of women covered in similar markings to the ones this mummy has, and Gobeil says that this discovery proves they are depictions of tattooed Egyptians.

"Now we have clear proof," he said.

Please visit the site: <http://www.cbc.ca/news/canada/montreal/egypt-archaeology-mummy-tattoo-1.3730337> [Go there for pix]

## **OLDEST HUMAN REMAINS FOUND OUTSIDE TEL AVIV, BY ASAF KAMER**

Located outside of Rosh HaAyin and Tel Aviv, Qesem Cave was accidentally discovered during road work 16 years ago; since then, the cave has revealed a wealth of information on early humans, and helps shed light on the evolution of humanity.

When work began to widen route 5 outside of Rosh HaAyin 16 years ago, workers discovered something incredible; the opening to a world frozen in time.

A powerful controlled explosion designed to demolish a giant limestone boulder blocking the path of the road exposed the entrance to a giant limestone cave which had been sealed for over 200,000 years.

This 200,000 year old time capsule contained within it rare artifacts from a critical point in the evolution of humanity, and turned the cave, now called "Qesem Cave," into one of the most important pre-historic sites in the world.

Archaeology Professor at Tel Aviv University Ron Barkai is the head of digging at Qesem Cave. He discussed the international significance of the finds found there.

"It's a very special cave," he said. "It reflects an unknown stage in the history of humanity. We don't know which type of human lived here. We know that they acted differently than everyone else who lived in this area before them. They seem like a different type of human. They didn't just behave differently, but they also looked differently. If we aren't mistaken, they were more similar to us ( humans today), and not their forefathers the Homo erectus.

Avi Gofar, another archaeologist from Tel Aviv University and who also helps manage the dig excitedly talks discusses the artifacts left behind by these early peoples, including flint tools and animal bones.

"This cave has been unusually well preserved," Gofar says. "The people who lived here were a huge revolution (in the history of humanity). What these people did here is completely different than what other humans were doing; in terms of chiseling technology, behavior, hunting techniques, organization, use of fire, and much more. In other words, there was an explosion of change (at Qesem Cave), and a lot of innovations."

One of the major discoveries at Qesem Cave which changed history books was the discovery of the oldest evidence of the consumption of cooked meat.

Professor Torsten Otmeier of the University of Erlangen-Nuremberg, Germany, comes with his students to help excavate in the cave every year and spoke about some of his findings.

"This site is approximately 400,000 years old. If you look at what (the early humans) did here, on their hunting strategies, the way they made their tools and how they prepared their food, it points to one of the most important changes in the history of mankind.

Before this era, early humans acted in a completely different manner. (This site) represents one of the most important turning points in the evolution of mankind."

Despite the heat and the harsh and sometimes dangerous physical labor, diggers who come from all over the world work diligently and with scientific precision as they sift dirt, sand, and limestone in the cave. A long conveyor belt brings dirt up from the depths of the cave to the surface, where the dirt is sifted for artifacts.

Professor Barkai explains the technological differences between Homo erectus and the type of humans whose remains were found in the cave.

"They made flint knives alongside other large artifacts such as hand axes which enabled these early peoples to hold onto the tool with one hand and cut. These are the oldest examples of knives in the history of humanity," he said.

"By comparison," he continues, "Europe only started seeing humans using knives 30,000 years ago. These knives were created 400,000 years ago. What happened here in Israel 400,000 years ago predates the rest of the world by hundreds of thousands of years. In the millions of years prior, there is no evidence of burnt bones (which suggest cooking). It seems these people ate cooked meat, meaning that Qesem Cave has evidence of the oldest barbeque ever held."

**Please visit the site: <http://www.ynetnews.com/articles/0,7340,L-4846834,00.html>**

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## **WHAT CAN TWO ETRUSCAN SARCOPHAGI TEACH US ABOUT OURSELVES?** **BY PHOEBE SEGAL**

In recent years, as the museum world has pursued a more visitor-centered, less art-historical approach to bringing art and people together, its professionals have found new ways to engage existing and potential audiences more deeply than ever before. What interests me, as a curator of ancient art, is what we can learn about ourselves by considering old objects in new lights.

From 2011 to 2013, as part of my work at the Museum of Fine Arts, Boston, I was involved in a conservation project led by conservator Mei-An Tsu, which cleaned and stabilised a pair of Etruscan stone sarcophagi unearthed in 1846 in a tomb in Vulci, Italy (see this feature from Apollo's February 2013 issue). Simultaneously, these compelling highlights of the MFA's collection have been centerpieces of an innovative educational partnership with local hospitals which uses 'art as a catalyst for discussions about the challenges and difficulties they [medical interns] face as physicians,' (see Michael Blanding's report in the Harvard Medicine Magazine for more information.) In consultation with their physician-educator colleagues, MFA educators Barbara Martin and Brooke DiGiovanni Evans lead first-year residents through exercises that sharpen their capacity for close looking and facilitate conversations around empathy and self-care. There are similar programmes at other US medical schools (Yale, Columbia and Brown, to name a few), all of which recognise the academic and humanistic benefits of analysing and interpreting works of art in training the next generation of doctors.

What better works of art to illustrate this point than the poignant images of married couples embracing for eternity on the lids of these sarcophagi? Death is a constant presence for first-year residents, and families turn to them for support and wisdom. By the same token, anyone who has ever stood at the bedside of a dying relative or friend, or has empathy for someone who has had that heart-wrenching experience, is powerfully and forever affected by these images. When discussing the sarcophagi I always tend to stress the art-historical fact that the level of intimacy portrayed is unparalleled in Etruscan art (and Classical art in general) but in truth it is the intensely emotional response they elicit that places them among the favourite works in the MFA's collection. The tenderly entwined couples carved in stone offer solace by reminding us that we are not the first or last to confront the death of a loved one.

And yet, more often than not works of art resonate with us for reasons different than the ones that motivated their creation or informed their original reception - and we should make our best effort not to conflate the two. The fact that we are sentimental about the marital love (we think is) portrayed on the coffin lids has everything to do with modern notions about romantic love as a prerequisite for marriage, and very little to do with how Arnth Tetnies and Ramtha Vishnai actually felt about each other. The elite Tetnies family, who commissioned the sarcophagi and enacted the funeral rituals in which they played a crucial and lasting role, may not have seen them as couples 'in love' as we know it. There is every reason to believe that what they valued most was the image of an idealised marriage and the social status it brought rather than the emotional

connectedness we read into the image. This would be no less true of a tender portrait of a modern power couple rumoured to have marital troubles.

Our collective inclination to see marital harmony and love is legitimate but we should claim it as our own rather than projecting it onto people in the distant past whose relationships and emotions are not known to us. Confronting the reasons why these images move us so - the longing for romantic love, the ever-diminishing supply of empathy and the end-of-life issues arising from advances in modern medicine among them - can bring us a richer understanding of our own values and is a most welcome use of ancient art.

Please visit the site: <http://www.apollo-magazine.com/can-two-etruscan-sarcophagi-teach-us> [Go there for pix]

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**MILLENNIA BEFORE WRITING, ANCIENT  
HOLY LAND ETCHINGS TRACKED  
PASSAGE OF SEASONS 16,500-YEAR-OLD  
BIRD'S HEAD CARVED INTO LIMESTONE  
PLAQUE FROM EIN QASHISH MAY BE  
AMONG OLDEST RITUAL OBJECTS EVER  
FOUND IN THE LEVANT, BY ILAN BEN ZION**

A collection of etched limestone pebbles found by the banks of Kishon River in northern Israel's Jezreel Valley may bear markings used to record the passage of seasons that predate the invention of writing by 20,000 years.

One of the carved stones unearthed at the site, marked with the head of a bird, may be among the oldest ritual objects ever found in the Holy Land. (A 30,000-year-old horse incised on a limestone plaque found in the Hayonim Cave in the Galilee predates the Ein Qashish finds and is among the oldest representations of the beast.)

The etchings were made between 23,000 and 16,500 years ago on limestone pebbles that fit comfortably in the palm of your hand. They are "rare evidence of graphic symbols applied by late Pleistocene hunters-gatherers in the Levant," the authors of a study published August 24 in the online journal PLoS ONE said, and they're indicative of social complexity among the inhabitants of the site.

The three stone carvings were discovered in 2012-2013 during excavations conducted at Ein Qashish by the Israel Antiquities Authority as part of the expansion of Highway 70 in northern Israel's Jezreel Valley, just north of the modern city of Yokne'am.

Radiocarbon dating of charcoal fragments found in the same layer as the stones dated some to around 23,000 years ago and others to 17,000-15,000 years ago. Other small stone tools from the layer point helped pinpoint the date of the bird's-head plaque (small low-relief sculpture) to the latter period, the Epipalaeolithic - the epoch just before the dawn of agriculture.

One stone is marked with a hatchmarked design, referred to by researchers as the ladder plaque. Another has a series of chevrons and geometric shapes. The most striking, however, bears the unmistakable head of a bird, identified by ornithologists as that of a bald ibis.

This stone, the authors of the paper wrote, is marked on one side by "the head of a bird seen in profile, together with a slightly curved, deeply incised line right above it. The bird is characterized by a large, curved beak and three 'feathers' in the form of little curvilinear, roughly parallel lines attached to the bird's nape. A large round eye appears in the middle of the upturned, drop-shaped head."

Historically, the bald ibis was found across Central Europe, North Africa and the Middle East, but destruction of habitat and hunting decimated its numbers. Today the bald ibis is a critically endangered species, with most of the remaining population surviving in Morocco.

The backside of the plaquette resembles the design on one of the other stones, featuring several deep lines forming "a motif composed of several deeply incised chevron-like signs, two of them forming a rhombus divided into two triangles in the middle of the composition."

Citing the use of bird imagery in other prehistoric art, including the enigmatic "Bird Man" from the Lascaux Cave in southern France, the authors speculate that the bird engraving may have "a spirit-related interpretation... especially considering the context of the find."

Ein Qashish's location near the Kishon River in the Jezreel Valley made it an ideal base camp for hunter-gatherer communities over the eons. Archaeologists posit that the presence of communal inhabitation at the site over the ages "implies regulating social issues related to reproduction, sharing resources and enhancing and/or renewing alliances - activities which are likely to be accompanied by rituals."

"Thus, the interpretation of the bird plaquette as an object employed in ritual, or depicting ritual-related accessories, as well as interpretation in terms of some cosmological belief/perception or an emblem of a particular group of hunters are all viable," the article said.

Alla Yeroshevich, an Israel Antiquities Authority archaeologist who was lead author of the study, hedged her bets when describing the plaquette as a ritual object because it's "[too] small to interpret it as a device displayed in public ritual with certainty."

When nomadic groups gathered at Ein Qashish in antiquity, she said, "a variety of issues [had] to be solved, among them mating/marriage, alliances, exchange of information etc. Each of these activities indeed could have been accompanied by rituals.

"If we assume that it happened during autumn or spring when the bald ibis was observed in the sky, the rituals could have been connected to this bird," she said. "It is very possible that the aggregating groups had their own emblem to be identified with during the aggregation events." One group may have chosen the ibis as its standard.

The authors of the article also posited that the ibis could have been used as "a cue to some seasonal change" linked to the bird's migratory patterns. The marks on the back of the stone could have been symbols corresponding to spring or autumn, when the bald ibis transited the Levant.

The ladder plaquette, the authors said, may have served as a rudimentary "artificial memory system" which could have kept track of "time and location for particular activities, events of aggregation, either for specialized hunting, marital issues, rituals, exchange of resources."

The people who created the objects were members of a society on the cusp of the agricultural revolution, transitioning from a peregrinating to a sedentary lifestyle. Compared to contemporary human populations in Europe, where the need to track shifting seasons for survival was more imperative, there was less environmental pressure in the less seasonal Levant to do so.

Nonetheless, the authors said, the etchings may have served as "records or notations related to availability of resources and timing of aggregation events" - in layman's terms: a primitive calendar.

"This is use of symbols which others can understand," Yaroshevich said. "It's like you writing [the numeral] 1 and that's something that everyone in the world understands its significance."

The rarity of these sorts of objects in the historical record in the Levant may derive from a lesser necessity for such technology to survive in a region with less drastic seasonal shifts, Yaroshevich said.

At the same time, "it could be that they used graphics but with degradable media - wood, ochre - so we don't find it," she told The Times of Israel in a telephone interview.

The fact that symbols similar to the ones found at Ein Qashish have been discovered at contemporary prehistoric sites Europe and East Asia, she added, point to there being an "older source" in Africa.

**Please visit the site: <http://www.timesofisrael.com/millennia-before-writing-ancient-holy-land-etchings-tracked-passage-of-seasons/> [Go there for pix]**

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## **7,000-YEAR-OLD PITS FOUND IN NORTHERN ISRAEL SUGGEST SOPHISTICATED ANCIENT IRRIGATION UNIVERSITY OF HAIFA ARCHEOLOGISTS SAY OLIVE PIT DISCOVERY REQUIRES REEVALUATION OF ANCIENT IRRIGATION TECHNIQUES**

Seven thousand years ago, in northern Israel's Tel Beit She'an Valley, ancient residents ate wheat, barley, buckwheat, lentils and peas. They also raised herds of goats, sheep, cattle and pigs, which were eaten mainly during festive events.

Now, following recent excavations west of the Jordanian border, archeologists from the University of Haifa announced they have found hundreds of olive seeds, requiring a reevaluation of prehistoric irrigation techniques in the area.

On Tuesday, researchers from the university's Zinman Institute of Archeology, working in conjunction with researchers from universities around the world, said the seeds were likely the result of artificial irrigation.

"The existence of an ancient agricultural system that relies on artificial irrigation will require a significant change in how we perceive their agricultural sophistication," said HU's Prof. Daniel Rosenberg, who runs the research project with Dr. Florian Klimsh, of the German Archaeological Institute.

According to Rosenberg and Klimsh, the prehistoric communities located on the Jordanian border, near Kibbutz Tirat Zvi, were the basis for the establishment of ancient cities and cultures of the Near East.

Although considered "the cradle of civilization," the researchers say little remains known about the region.

In their study, the archeologists combined researchers from a variety of disciplines to focus on finding botanical evidence to determine the specific conditions prevailing in the Jordan Valley during that time to understand the economy, diet, agricultural practices, and social organization.

While the exploitation of olives during this period is well documented, Rosenberg said the large amount of seeds found during the excavation raises a number of questions requiring a rethinking of ancient irrigation methods, and about ancient trade relations involving olives and olive oil.

Based on botanical and animal bone evidence collected in the area over the past four years, the researchers said they were partially able to reconstruct the diet and economy of the ancient inhabitants of the Jordan Valley.

Indeed, Rosenberg and Klimsh found that "back-up" plant species were grown to accommodate the long maturation cycles occurring during different seasons, based on the possibility of a weak harvest.

"For example, the maturation of wheat and barley is different from that of olives, lentils and peas, which were found in the site, and have different nutritional contributions," said Rosenberg.

Meanwhile, thousands of animal bones found in the area testify to the care of herds of goats, sheep, pigs, and various cattle, he added.

Ultimately, the archeologists hope their research will contribute to the ongoing preservation of area plants by understanding irrigation techniques used thousands of years ago.

"This provides a rare glimpse into the lifestyles of the ancient inhabitants of the Jordan Valley and the heritage of the region in general, and allows us to not just visit their homes, but also their dishes and pots," said Rosenberg.

**Please visit the site: <http://www.jpost.com/Israel-News/7000-year-old-pits-found-in-northern-Israel-suggest-sophisticated-ancient-irrigation-466414>**

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## **ARCHAEOLOGISTS FIND SENIOR CLERGYMAN’S TOMB IN NEWLY DISCOVERED BASILICA IN BULGARIA’S ROCK CITY PERPERIKON, BY IVAN DIKOV**

The tomb of a senior monk and clergyman has been unearthed by archaeologists in the newly discovered Early Christian basilica in the prehistoric, ancient, and medieval rock city of Perperikon (also known as Perperik or Perperek) near Kardzhali in Southern Bulgaria.

As an archaeological site, Perperikon is an 8,000-year-old prehistoric megalithic shrine, which was later built upon by the Thracians, the Romans, the Byzantines, and the medieval Bulgarian Empire, and was destroyed as a city and fortress by the invading Ottoman Turks in the 14th century.

The newly found temple is an Early Byzantine bishop’s basilica from the second half of the 5th century AD.

The discovery of what might be the largest Early Christian temple in Bulgaria’s Rhodope Mountains was announced earlier in August 2016 together with the discovery of a necropolis containing at least 25 tombs from the 13th century, i.e. the time of the Second Bulgarian Empire (1185-1396); 22 of these were intact, while three were robbed in the Late Antiquity. More graves have been exposed subsequently.

While opening the tombs, the team of Prof. Nikolay Ovcharov from the National Institute and Museum of Archaeology in Sofia, who has been excavating Perperikon since 2000, has noticed that one of them stands out, Ovcharov has told the Bulgarian National Television.

The Early Christian tomb in question was hewn into the rocks, and was covered with stone slabs. It was opened before reporters.

“This grave is totally different from the other 34 graves, most of them from the 12th-13th century that we have been excavating this summer around the church. It was covered with well shaped slabs, and its chamber was hewn into the rocks, and shaped very well. It even has a water draining facility,” explains the archaeologist as cited by the Standart daily.

“No bones were found inside the tomb. The probable reason for that is the high acidity of the local soil which might have destroyed them. Another possibility is that the bones were removed and reburied in a bone vault or inside the basilica. [This is possible] especially, if he was a saintly man who was worshiped in his time,” he adds.

Ovcharov has also revealed that the pottery discovered inside the tomb dates back to the 5th century AD, and that no precious finds such as gold crosses or other church artifacts can be expected to be found in it because the buried man was a monk.

In his words, this was probably one of the first bishops of the basilica, who were monks, and as per the Christian tradition, those were buried in cassocks only, without any additional artifacts.

“The fact that the tomb dates back to the time when the basilica was built has led us to believe that someone special was buried there. So has the fact that this was a bishop’s basilica judging by the synthronon – the bishop’s throne and clergy stalls, the pulpit, the preaching tribune. That is why we suspect that this was a bishop’s funeral,” elaborates the archaeologist.

Another of the newly discovered graves dating back to the 9th-10th century features a tomb stone with a cross and an inscription in Greek. It is yet to be cleaned up by restorers but it is presumed that the inscription contains the buried man’s name and a prayer for his soul.

“Inscriptions are relatively rare in Perperikon so whenever we find any they are very valuable,” says the lead archaeologist.

Other graves, mostly from the High Middle Ages, i.e. the 12th-13th century, have yielded a number of precious finds – six ear pads, silver, bronze, and gold-coated earrings, rings, small beads, and a gold-coated appliqué, among others. The artifacts are yet to be cleaned up and examined more thoroughly.

At about the same time as the opening of the senior clergyman’s tomb, the team carrying out the excavations also found for the first time colored plaster fragments from the murals of the basilica. The murals in question also turned out to be from the Early Christian period. They date back to the 5th-6th century, i.e. the Late Antiquity.

The archaeologists have also found three massive columns, which have been preserved up to 1.92-1.96 meters in height, and are also from the Early Christian period of the basilica, as well as one of the Ionic capitals, half a meter tall, which decorated the columns. Several large tiles from the temple’s roof and parts of the brick floor have also survived.

So far the Early Christian basilica in Perperikon has been found to have been 31 meters long, 14 meters wide, and was probably up to 9 meters tall. Its length will probably reach over 40 meters after the upcoming excavation of its atrium.

This makes it not just the largest Early Christian temple in the picturesque Rhodope Mountains (spanning about 15,000 square kilometers in Bulgaria and Greece) but also one of the larger ones in Bulgaria.

For example, it was roughly the same size as the 4th century AD St. Sofia Basilica in Sofia, the Elenska Basilica and the Belovo Basilica, and was larger than the bishop’s basilica in the Black Sea town of Nessebar (ancient Mesembria).

According to the archaeologists, the newly found 5th century church in Perperikon had a monumental stone colonnade and beautiful decorations, and was built of large stone blocks (quadras). Some of the stone columns have survived. Its walls are over 1 meter thick. Its floor was covered with stone slabs.

It has been found that the basilica existed in its original form until the 7th century AD when it was abandoned at the time of Byzantium's relative decline.

In the 9th century, at the time of the First Bulgarian Empire (632/680-1018), the basilica was remodeled, with only its central nave remaining in use, but was nonetheless impressive in size. At the time, its functioning section was 20 meters long.

The church was last remodeled in the 12th century when its sole surviving nave was "reduced" to a length of 13 meters.

It was in operation until the middle of the 14th century when Perperikon was conquered by the invading Ottoman Turks, and the church was abandoned. Overall, it was in use for nearly a millennium.

The archaeological excavations of the Early Christian basilica and the medieval necropolis are going to continue in 2017.

Ovcharov has noted that the newly found church in Perperikon, together with another large Early Christian basilica which has been discovered in the Palmatis Fortress in Northeast Bulgaria, are emerging as some of the country's most important archaeological discoveries in 2016.

The 2016 excavations of Perperikon are expected to complete the research of the acropolis of the rock city which has been going on for 17 years now. In July 2016, the archaeologists announced the discovery of the eastern gate of Perperikon.

**Please visit the site: <http://archaeologyinbulgaria.com/2016/08/29/archaeologists-find-senior-clergymans-tomb-in-newly-discovered-basilica-in-bulgarias-rock-city-perperikon/>**

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## **KING SOLOMON-ERA PALACE FOUND IN BIBLICAL GEZER MONUMENTAL 3000- YEAR-OLD RUINS, PHILISTINE POTTERY SUPPORT BIBLICAL TALES OF GEZER'S RISE, AND FALL TO A JEALOUS PHARAOH, BY PHILIPPE BOHSTROM**

A palatial building dating to the era of King Solomon 3000 years ago has been discovered in the royal city of Gezer, though there is no evidence which of the Israelite kings lived there, if any.

The monumental building dates to the 10th century BCE, the era associated with King Solomon, who is famed for bringing wealth and stability to the newly-united kingdom of Israel and Judah. The American archaeological team also found a layer featuring Philistine pottery, lending credence to the biblical account of them living in the city until being vanquished by King David.

The complex features a large central courtyard, like contemporary palace-like buildings found throughout the southern Levant, including at Hatzor and Megiddo. Though there's no telling who ruled from there, if anybody did, the edifice is significantly larger than the size of ordinary houses of the time, excavation co-director Prof. Steve Ortiz, representing the Tandy Museum of Southwestern Baptist Theological Seminary of Fort Worth, Texas, told Haaretz. Among the features not found in usual domestic structures is ashlar masonry - large rectangular-shaped monolithic hewn stones-in the corners of rooms, Ortiz said.

### **Violent 6000-year history**

Gezer, located in the Shephela (foothills) region of Israel overlooking the coastal plain, at the junction of a pass leading up to Jerusalem, goes back way before King Solomon. The site was occupied as far back as the Chalcolithic period (4th millennium BCE), and 3400 years ago, its Canaanite population was closely tied with far-off Egypt, as we know from cylinder seals and a large cartouche of Pharaoh Amenhotep III uncovered there in previous seasons.

Excavations have proven that the city did suffer violent destruction at the hands of the Egyptians, who mention Gezer time and again in their records. Thutmose III recorded its capture on the walls of the temple at Karnak; The city later played a prominent role in the Amarna Tablets, mentioned by name at least nine times. Pharaoh Merneptah boasted on his stele that he "seized Gezer." Later an Egyptian pharaoh turned on Gezer, for reasons we no longer know, burning down the city and slaughtering its Canaanite population.

According to the Old Testament, the city was also associated with the Philistines in David's time: the king broke their power "from Geba to as far as Gezer" (2 Samuel 5:25; 1 Chronicles 14:16). This excavation season has proved the Philistine link too, when the archaeologists revealed a layer with Philistine bichrome pottery. The archaeologists also

found a tell-tale fragment of a so-called "Ashdod figurine," long-necked, bird-faced female figures that many believe depict an Aegean goddess. Such figurines have been found associated with Philistine remains in other excavations, such as in Ashdod, Timna, Ekron and Ashkelon.

Ortiz puts these discoveries into proportion: Archaeologists still believe Gezer was mainly a Canaanite city, but during their era from about 1200 to 600 BCE, Philistines either lived in it alongside the Canaanites, or the two peoples had trading relations. "Gezer sits at an important crossroads. By location, it was an important border city," Ortiz says.

### **Dowry to Solomon's wife**

The newly discovered palace is west of the so-called Solomonic Gate, a six chambered inner gate, although it is doubtful that a Jerusalemite king actually spent time at Gezer. The excavation team calls the building "Solomon's Palace" because of the biblical tradition of Solomon building grand projects at Hatzor, Megiddo, and Gezer (1 Kings 9:15: "And this is the reason of the levy which king Solomon raised; for to build the house of the Lord, and his own house, and Millo, and the wall of Jerusalem, and Hazor, and Megiddo, and Gezer").

The bible says that Egypt's powerful monarch gave Gezer as a dowry to Solomon's wife (or one of them - legend says his harem consisted of 700 wives and 300 concubines) and that Solomon rebuilt the city: "Pharaoh king of Egypt had come up and captured Gezer and had burned it with fire, and he had also killed the Canaanites dwelling in the city. So he gave it as a parting gift to his daughter the wife of Solomon. Solomon built up Gezer" - (1 Kings 9: 16-17). The excavations have uncovered tantalizing evidence that this biblical passage was based on actual events.

The city was destroyed in the late Iron Age I (around 1200-1000) BCE. On the ruins, a new city with fortifications, the famous gate complex, and a palace were constructed, dating to the second half of the 10th century BCE - Solomon's era. The sheer scale and craftsmanship of the palace shows that only a ruler with vast resources and a highly organized and skilled labor forces could afford, let alone organize, the construction of this palace complex.

The main feature is two parallel long rooms, or courtyards, surrounded on all sides by various rooms, numbering at least 15. The palace has two entrances from the east and west. The entrance from the west also connects this building to the monumental six-chambered gate associated by most scholars with Solomon. This entrance is more robustly built than the rest of the building: The walls are constructed with two to three rows of stones wide, built of roughly dressed field stones somewhat smaller in size than those used in the rest of the building.

### **Egypt invades Israel and Judah**

Several of the rooms and the courtyards, which had once been thickly plastered, suffered destruction, judging by roughly meter-thick layer of building stones and rubble on the floors. This destruction is tentatively associated with the Shishak invasion in 925 BCE: the pharaoh (also known as Sheshonk I in the Egyptian records) is famous for his invasion of Israel and Judah, as recorded in the Old Testament (2 Chronicles 12:1-12).



When Solomon died, his kingdom descended into chaos. With a mighty force of chariots and horsemen, Shishak attacked ancient Israel, seeking control of trade routes with Egypt and to extend his power and influence in the region. Ample evidence of his assault remains in Israel and Judah. A fragment of a stele found at Megiddo mentions Sheshonk (Shishak), possibly indicating that the stele was erected there to commemorate his victory. Also, a relief on a temple wall at Karnak (in the ancient Egyptian city of Thebes) lists numerous local cities or villages that Shishak conquered.

Archaeologists had assumed that once they cleared the massive stones left behind from the destruction, they would find storerooms filled with artifacts. To their dismay, most of the rooms were empty. "It appears that everything was cleaned out before the destruction. Perhaps they knew of the impending attack and removed most of the objects," Ortiz says.

Figurine of female deity that would have been attached to a cultic stand, found in the Shishak destruction dating to around the 10th century BCE destruction of the Solomonic-era palace. Tel Gezer Excavation Project, Steven M. Ortiz

Several finds indicate the relative wealth of the inhabitants. One is a lid from an ivory gamebox, consisting of 20 squares with elaborate rosette carvings. The diggers found faience amulets and a Canaanite-type female fertility figurine that was missing its head. That figurine was either a leftover from earlier occupants or an indication of continuity from the Canaanite tradition into the 10th century BCE.

The researchers also found three ovens in the courtyard, but no complete vessels associated with them. One room had a complete cooking pot and a baby rattle.

Dr. Sam Wolff, an archaeologist employed by the Israel Antiquities Authority and co-director of the excavation along with Ortiz, urges caution in connecting the finds from the excavation with biblical texts.

Regarding attribution of the palace to the time of King Solomon, Wolff tells Haaretz, "Our 10th century date is tentative, pending further study of the ceramic assemblage and the results of carbon 14 analyses. Others may claim that the pottery we are calling 10th century is in fact 9th century.

"In this regard, I would point out that we have found a significant stratum between what we are calling the 10th century and the 8th century strata, and we date this stratum to the 9th century," Wolff says. "For the earliest stratum to be 9th century as well is certainly possible, but it would then squeeze two significant strata into one century. For the time being we prefer to date this earlier stratum, along with the six-chamber gate and the fortification wall connecting the two, to the 10th century; that is, to the time of Solomon."

Please visit the site: <http://www.haaretz.com/jewish/archaeology/1.739358> [Go there for pix]

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## **EXTRACTION OF DNA FROM PARCHMENT** **NOW POSSIBLE**

"YORK.- Millions of documents stored in archives could provide scientists with the key to tracing the development of agriculture in the British Isles over the last 700 years, according to new research at the University of York and Trinity College Dublin.

But the crucial information the documents hold is not contained in their texts but the parchment on which it is written.

Researchers in Dublin and York used the latest scientific techniques to extract ancient DNA and protein from tiny samples of parchment from documents from the late 17th and late 18th centuries. The resulting information enabled them to establish the species type of animals from which the parchment was made.

It therefore gives scientists a potentially unrivalled resource to analyse the development of livestock husbandry across the centuries. The research is published in Philosophical Transactions of the Royal Society B.

Researchers in the Centre for Excellence in Mass Spectrometry at York extracted collagen (protein) from two tiny (2x2cm) samples of parchment provided by the University's Borthwick Institute for Archives. Scientists at Trinity College extracted DNA from the same parchment samples. "

and later

"Parchment a huge reservoir of DNA information

Before the mass production of paper, parchment was the major medium for legal documents and until the widespread adoption of typewriters, they were a clerk's preferred medium for many formal legal documents and records.

Parchment has a number of properties that make it compelling material for DNA extraction and analysis. Parchments are made from the skins of domestic animals, particularly livestock, and their manufacture results in robust artefacts, which can survive intact for many centuries.

Secondly, they are abundant and because of their enduring legal value they have been carefully managed. In the 20th century, this has included protecting them from both high temperatures and fluctuating humidity.

Thirdly, unlike bone remains, of which only a small percentage have been excavated, parchments are above ground, archived and in the case of legal documents, directly related to specific dates – a level of resolution largely unachievable with any other historic DNA source. Even undated documents can be dated palaeographically to a resolution better and more cheaply than radiocarbon dating."

This is very interesting. I am a little surprised that DNA can survive the preparation

process for parchment. Although the article says "tiny" samples were used, it gives that amount as "2x2cm" which seems quite a lot to me. It;s hard to imagine anyone allowing a 2x2cm bit of the Book of Kells being disintegrated for this kind of test!

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