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# Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

**- Ιούλιος 2016 -**

**Σωκράτης:** "Γι' αυτόν λοιπόν, τον λόγο, είπα εγώ, οι άξιοι άνθρωποι δεν επιδιώκουν την εξουσία ούτε για τα χρήματα ούτε για τη δόξα· γιατί ούτε πληρωμένοι θέλουν να χαρακτηριστούν, εισπράττοντας φανερά μισθό για το αξίωμά τους, ούτε κλέφτες, αποκομίζοντας κρυφά κέρδος από αυτό.

Ούτε πάλι για τη δόξα· γιατί δεν είναι φιλόδοξοι. Πρέπει λοιπόν να υπάρχει κάποιος αναγκασμός γι' αυτούς και κάποια τιμωρία προκειμένου να θελήσουν να ασκήσουν εξουσία – έτσι που σχεδόν να θεωρείται ντροπή να αναλάβει κανείς με τη θέλησή του κυβερνητικό αξίωμα προτού να εξαναγκαστεί να το πράξει – κι η πιο μεγάλη τιμωρία εδώ είναι να τον εξουσιάζει κάποιος χειρότερός του, αφού ο ίδιος δε θα έχει τη διάθεση να κυβερνά.

Από φόβο γι' αυτήν ακριβώς την τιμωρία δέχονται κατά τη γνώμη μου να ασκήσουν εξουσία οι άξιοι άνθρωποι, όταν καμιά φορά συμβεί να πάρουν εξουσία στα χέρια τους, και αναλαμβάνουν τότε να κυβερνήσουν όχι με την ιδέα ότι τους περιμένει εκεί κάτι καλό ή ότι θα καλοπεράσουν αλλά σαν να προχωρούν σε κάτι που είναι ανάγκη να το πράξουν και που δεν έχουν κάποιους καλύτερούς τους ή έστω όμοιούς τους για να τους το αναθέσουν."

*(Πλάτων, Πολιτεία, Α, 347 b-d)*

# Newsletter of the Hellenic Society of Archaeometry

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## **ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS**

### **22<sup>Ο</sup> ΠΑΝΕΛΛΗΝΙΟ ΣΥΝΕΔΡΙΟ ΧΗΜΕΙΑΣ, «ΧΗΜΕΙΑ: ΕΡΕΥΝΑ ΚΑΙ ΕΚΠΑΙΔΕΥΣΗ ΜΕ ΣΤΟΧΟ ΤΗ ΒΙΩΣΙΜΗ ΑΝΑΠΤΥΞΗ», 2-4 ΔΕΚΕΜΒΡΙΟΥ 2016, ΘΕΣΣΑΛΟΝΙΚΗ**

**22<sup>ND</sup> NATIONAL CONFERENCE OF CHEMISTRY, “CHEMISTRY:  
RESEARCH AND EDUCATION IN VIEW OF SUSTAINABLE  
DEVELOPMENT”, 2-4 DECEMBER, 2016, THESSALONIKI, GREECE**

The 22<sup>nd</sup> National conference of chemistry is organized by the Association of Greek Chemists under the auspices of Chemistry Department of Aristotle University of Thessaloniki and aims to the participation of experts, who are active in all areas of Chemistry. Despite the optimistic forecasts for ending of financial crisis, it still is a severe problem in Greece, with visible consequences in research and education. Against all odds, the members of the scientific community across the country continue their work contributing to innovative activities in the direction of economic and social development. Current trends in research activity of all of the scientific community converge on sustainable development, which is the main challenge of the 21st century, according to the needs of the present and future generations.

The topics that are to be covered include:

1. Analytical Chemistry-Quality Control
2. Inorganic and bioinorganic chemistry
3. Archaeometry
4. Biochemistry-biotechnology-molecular biology
5. Clinical chemistry-toxicology
6. Organic chemistry-chemistry of natural products-Medicinal chemistry
7. Green chemistry
8. Physical chemistry
9. Nanotechnology
10. Environmental Chemistry and technology
11. Polymer Chemistry and technology
12. Food Chemistry and technology
13. Materials: Chemistry and technology
14. Chemical technology and engineering
15. Educational chemistry

**2<sup>η</sup> ΑΝΑΚΟΙΝΩΣΗ  
ΠΡΟΣΚΛΗΣΗ ΥΠΟΒΟΛΗΣ ΠΕΡΙΛΗΨΕΩΝ**

#### **Διοργάνωση**

Ένωση Ελλήνων Χημικών & Τμήμα Χημείας ΑΠΘ

#### **Ταυτότητα του Συνεδρίου**

Το 22<sup>ο</sup> Πανελλήνιο Συνέδριο Χημείας διοργανώνεται στη Θεσσαλονίκη από την Ένωση Ελλήνων Χημικών, και το Σύνδεσμο Χημικών Βορείου Ελλάδος σε συνεργασία με το Τμήμα Χημείας, ΑΠΘ.

*Το συνέδριο εντάσσεται στο πλαίσιο του εορτασμού των 90 χρόνων του ΑΠΘ.*

**Στόχος** του συνεδρίου είναι η συμμετοχή υψηλού επιπέδου ερευνητών, που δραστηριοποιούνται σε όλους τους τομείς της Επιστήμης της Χημείας. Παρά τις αισιόδοξες προβλέψεις για έξοδο από την κρίση, αυτή συνεχίζει να αποτελεί υπαρκτό πρόβλημα στην Ελλάδα του 2016, με ορατές συνέπειες στην έρευνα και την εκπαίδευση. Οι σύγχρονες τάσεις στην ερευνητική δραστηριότητα όλων των μελών της επιστημονικής κοινότητας συγκλίνουν στη βιώσιμη ανάπτυξη που αποτελεί το κύριο ζητούμενο του 21<sup>ου</sup> αιώνα, σύμφωνα με τις ανάγκες της παρούσας γενιάς, αλλά και εξασφαλίζοντας τις ευκαιρίες ικανοποίησης των αναγκών των επόμενων γενεών.

Παρά τις αντίξοες συνθήκες τα μέλη της επιστημονικής κοινότητας σε όλη τη χώρα συνεχίζουν το έργο τους συμβάλλοντας με καινοτόμες δραστηριότητες στην κατεύθυνση της οικονομικής και κοινωνικής ανάπτυξης.

Μετά από 5 χρόνια από το 21<sup>ο</sup> Πανελλήνιο Συνέδριο Χημείας καλούνται οι επιστήμονες να παρουσιάσουν τα αποτελέσματα της ερευνητικής δραστηριότητας στο 22<sup>ο</sup> Πανελλήνιο Συνέδριο Χημείας στο οποίο διοργανώνεται και το σεμινάριο της Διδακτικής στη Χημεία.

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*Α. Παρασκευοπούλου, ΑΠΘ*

*Β. Ευαγγελίου, Γεωπονικό Πανεπ. Αθηνών*

*Π. Δεμερτζής, Παν. Ιωαννίνων*

*Π. Μαρκάκη, ΕΚΠΑ*

*Μ. Παπαγεωργίου*

**Χημεία και Τεχνολογία Υλικών:**

***Ε. Δεληγιάννη, ΑΠΘ***

***Σ. Σκλαρή, ΕΚΕΤΑ***

*Χ. Καραπαναγιωτή, Πανεπ. Πατρών*

*Β. Σταθόπουλος, ΤΕΙ Στερεάς Ελλάδας*

*Π. Τρικαλίτης, Πανεπ. Κρήτης*

**Χημική Τεχνολογία και Χημική Μηχανική:**

***Θ. Καραπάντσιος, ΑΠΘ***

***Μ. Κώστογλου, ΑΠΘ***

*Ν. Ανδρίτσος, Πανεπ. Θεσσαλίας*

*Μ. Γεωργιάδης, ΑΠΘ*

*Α. Μητρόπουλος, ΤΕΙ Ανατολικής Μακεδονίας και Θράκης*

**Βασική Θεματολογία του Συνεδρίου**

- 1) Αναλυτική Χημεία- Έλεγχος Ποιότητας
- 2) Ανόργανη και Βιοανόργανη Χημεία
- 3) Αρχαιομετρία
- 4) Βιοχημεία-Βιοτεχνολογία-Μοριακή βιολογία
- 5) Κλινική Χημεία- Τοξικολογία
- 6) Οργανική Χημεία-Χημεία Φυσικών προϊόντων-Φαρμακευτική Χημεία
- 7) Πράσινη Χημεία
- 8) Φυσική και Θεωρητική Χημεία
- 9) Χημεία και Νανοτεχνολογία
- 10) Χημεία και Τεχνολογία Περιβάλλοντος
- 11) Χημεία και Τεχνολογία Πολυμερών
- 12) Χημεία και Τεχνολογία Τροφίμων
- 13) Χημεία και Τεχνολογία Υλικών
- 14) Χημική Τεχνολογία και Χημική Μηχανική
- 15) Σεμινάριο Διδακτικής στη Χημεία

**Σημαντικές Ημερομηνίες:**

Υποβολή περιλήψεων: 15-9-2016

**Ανακοινώσεις & Πρακτικά του Συνεδρίου**

Οι εισηγήσεις - προφορικές και αναρτημένες/posters - θα κριθούν από την Επιστημονική Επιτροπή. Σε πρώτη φάση θα κριθούν και θα γίνουν κατ' αρχήν αποδεκτές οι περιλήψεις και στη συνέχεια τα πλήρη κείμενα των εργασιών. Όλες οι εργασίες - προφορικές και αναρτημένες/posters - θεωρούνται ισότιμες και όσες γίνουν δεκτές, θα περιληφθούν στα Πρακτικά του Συνεδρίου.

**Υποβολή Περιλήψεων**

Η περίληψη στην ελληνική γλώσσα πρέπει να γραφεί με γραμματοσειρά Times New Roman 12, διάστιχο μονό και περιθώρια 3 cm παντού. Περιλαμβάνει: τίτλο εργασίας (σε TNR14 Bold), ονόματα συγγραφέων, φορέα και πλήρη διεύθυνση επικοινωνίας τους (με τηλέφωνο, Fax και E-mail). Θα ακολουθεί σύντομη περίληψη στην αγγλική γλώσσα. Η συνολική έκταση πρέπει να είναι μέχρι 1 σελίδα Α4.

Η τελική κατανομή των εργασιών ως προφορικές ή ως poster θα γίνει από την Επιστημονική Επιτροπή.

Οι περιλήψεις πρέπει να υποβληθούν ηλεκτρονικά στην ιστοσελίδα της ΕΕΧ:  
[http://www.eex.gr/index.php?option=com\\_rsform&formId=3](http://www.eex.gr/index.php?option=com_rsform&formId=3)

σύμφωνα και με τις οδηγίες που βρίσκονται στην ιστοσελίδα του συνεδρίου, η οποία και θα ενημερώνεται τακτικά:

<http://22psx2016.blogspot.gr/p/blog-page.html>

### **Κόστος Συμμετοχής**

	<b>έως 30-9-2016</b>	<b>από 1-10-2016</b>
Σύνεδροι/Εισηγητές	100 €	120 €
Μεταπτυχιακοί φοιτητές & Υπ. Διδάκτορες	40 €	50 €
Φοιτητές	20 €	30 €

Στο κόστος συμμετοχής περιλαμβάνονται: η παρακολούθηση του συνεδρίου, το αναλυτικό Πρόγραμμα και τα Πρακτικά του Συνεδρίου (σε ηλεκτρονική μορφή), η εναρκτήρια δεξίωση, οι καφέδες και τα αναψυκτικά στα διαλείμματα, καθώς και λοιπά ενημερωτικά υλικά του Συνεδρίου.

Προϋπόθεση για να δημοσιευθεί μια εργασία στα Πρακτικά του Συνεδρίου είναι η εγγραφή και συμμετοχή ενός τουλάχιστον εκ των συγγραφέων στο Συνέδριο έως τις 30-9-2016.

### **Τόπος**

Το 22<sup>ο</sup> Πανελλήνιο Συνέδριο διοργανώνεται στο Συνεδριακό Κέντρο ΚΕΔΕΑ (Κέντρο Διάδοσης Ερευνητικών Αποτελεσμάτων) του Αριστοτελείου Πανεπιστημίου Θεσσαλονίκης (ΑΠΘ).

### **Πληροφορίες**

*Ένωση Ελλήνων Χημικών – ΠΤΚΑΜ*

Αριστοτέλους 6, 54623 Θεσσαλονίκη

Γραφεία της ΕΕΧ-ΠΤΚΑΜ (18.00-21.00), τηλ.: 2310 278077

E-mail: [22psx2016@gmail.com](mailto:22psx2016@gmail.com)

<http://22psx2016.blogspot.gr/p/blog-page.html>

Please visit the site: [http://www.eex.gr/index.php?option=com\\_rsform&formId=3](http://www.eex.gr/index.php?option=com_rsform&formId=3)

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## **ΗΜΕΡΙΔΑ 2016 ΠΑΝΕΛΛΗΝΙΑΣ ΕΝΩΣΗΣ** **ΣΥΝΤΗΡΗΤΩΝ ΑΡΧΑΙΟΤΗΤΩΝ**

Η Π.Ε.Σ.Α. διοργανώνει, για ένατη χρονιά, την Ετήσια Ημερίδα (2016) των Συντηρητών Αρχαιοτήτων και Έργων Τέχνης του Υπουργείου Πολιτισμού. Το πιθανότερο χρονικό διάστημα διεξαγωγής είναι η τελευταία εβδομάδα του Νοεμβρίου ή η πρώτη του Δεκεμβρίου 2016. Η ακριβής ημερομηνία και ο τόπος διεξαγωγής της Ημερίδας θα ανακοινωθούν σε εύλογο χρονικό διάστημα.

Αντικείμενο της ημερίδας θα είναι οι παρουσιάσεις Τεχνικών Εκθέσεων και Μελετών, Επεμβάσεων Συντήρησης και Αποκατάστασης Αρχαιοτήτων και Έργων Τέχνης, καθώς και Ερευνητικών Εργασιών. Δυνατότητα ανακοίνωσης έχουν όλοι οι Συντηρητές Αρχαιοτήτων & Έργων Τέχνης καθώς και όσοι άλλοι Επιστήμονες ενδιαφέρονται να παρουσιάσουν θέματα που άπτονται των ενδιαφερόντων της Συντήρησης Αρχαιοτήτων & Έργων Τέχνης.

Τα μέλη του Σωματίου μας θα μπορούν να συμμετέχουν ως εισηγητές ή ως σύνεδροι χωρίς οικονομική επιβάρυνση. Χωρίς οικονομική συνδρομή θα συμμετάσχουν επίσης και όλοι οι εισηγητές, ανεξαρτήτως αν δεν είναι μέλη. Οι Συντηρητές Αρχαιοτήτων και Έργων Τέχνης που δεν είναι μέλη της Π.Ε.Σ.Α. και επιθυμούν να μετέχουν ως σύνεδροι, θα καταβάλλουν συμβολικό χρηματικό αντίτιμο για τη συμμετοχή τους, το οποίο θα οριστεί από το Δ.Σ. και την Οργανωτική Επιτροπή. Το ίδιο ισχύει και για τους άλλους επιστημονικούς κλάδους που επιθυμούν να παρακολουθήσουν την ημερίδα ως σύνεδροι. Η Ημερίδα θα περιλαμβάνει προφορικές ανακοινώσεις καθώς και posters (ανακοινώσεις τοίχου).

Οι συγγραφείς ή ομάδες συγγραφέων που επιθυμούν να είναι υποψήφιοι για να ανακοινώσουν στην Ημερίδα 2016 (είτε προφορικά είτε με poster) θα πρέπει να το δηλώσουν ψηφιακά μέσω ηλεκτρονικής φόρμας στο σύνδεσμο: <http://goo.gl/forms/uNUI05zwmkeMqXf63>, όπου θα κληθούν να υποβάλλουν και το κείμενο (χωρίς φωτογραφίες ή άλλο υλικό) της περίληψης της εργασίας τους, με όριο τους 3500 χαρακτήρες. Η περίληψη θα πρέπει να παρέχει μια όσο το δυνατόν πληρέστερη περιγραφή του περιεχομένου της ανακοίνωσης βάσει του οποίου θα κριθεί η επιλογή της. Μέσα στην ηλεκτρονική φόρμα παρέχονται οδηγίες για τη σωστή συμπλήρωση της υποψηφιότητας.

(Παρακαλούμε για οποιαδήποτε άλλη πληροφορία εκτός της υποβολής των περιλήψεων απευθυνθείτε στην διεύθυνση της Π.Ε.Σ.Α.: [pesa@pesa.com.gr](mailto:pesa@pesa.com.gr)).

Τελική ημερομηνία υποβολής των περιλήψεων των ανακοινώσεων είναι η 7η Οκτωβρίου 2016.

Οι επιλεγμένες εργασίες θα δημοσιευτούν στα «Πρακτικά της Ημερίδας 2015 της Π.Ε.Σ.Α.» που θα εκδοθούν το επόμενο έτος. Το πλήρες κείμενο για το τεύχος των πρακτικών θα παραδοθεί το αργότερο την ημέρα διεξαγωγής της Ημερίδας. Οι συγγραφείς θα ενημερωθούν με ηλεκτρονικό ταχυδρομείο για την επιλογή της εργασίας τους, από την Επιστημονική Επιτροπή. Η Επιστημονική Επιτροπή διατηρεί το δικαίωμα να μην επιλέξει μια εργασία λόγω ελλείψεων σε πρωτοτυπία, αδυναμία στην οργάνωση

ή στη σύνταξη του κειμένου, εξαιρετικής απόκλισης από το αντικείμενο της Ημερίδας, καθώς και λόγω παρέλευσης της ημερομηνίας υποβολής. Σε περίπτωση μη επιλογής, το υλικό θα επιστραφεί στο συγγραφέα.

Οι συγγραφείς των εργασιών, ως κάτοχοι των πνευματικών δικαιωμάτων, παραχωρούν με τη συμμετοχή τους στην Ημερίδα, την άδεια για τη δημοσίευση των εργασιών στο τεύχος των Πρακτικών καθώς και της περίληψης στην ιστοσελίδα της Π.Ε.Σ.Α.

Η παρούσα ανακοίνωση θα αποσταλεί στα μέλη της Π.Ε.Σ.Α. και θα αναρτηθεί στην ιστοσελίδα του Σωματείου. Γραπτή ενημέρωση θα γίνει επίσης και στις Υπηρεσίες και τους Εποπτευόμενους Φορείς του ΥΠ.ΠΟ.Α.

Για το Δ.Σ. της Π.Ε.Σ.Α.

Ο Πρόεδρος Ο Γεν. Γραμματέας

Ιωάννης Βερροϊόπουλος Βασίλειος Παναγιωτόπουλος

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ΠΑΝΕΛΛΗΝΙΑ ΕΝΩΣΗ ΣΥΝΤΗΡΗΤΩΝ ΑΡΧΑΙΟΤΗΤΩΝ

Προπυλαίων 7, 11742 Αθήνα

Τηλ/fax: 2109239913 - email: [pesa@pesa.com.gr](mailto:pesa@pesa.com.gr), - [www.pesa.gr](http://www.pesa.gr)

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**HISTORICAL METALLURGY SOCIETY**  
**RESEARCH IN PROGRESS MEETING,**  
**TUESDAY 29<sup>TH</sup> NOVEMBER, 2016,**  
**DEPARTMENT OF METALLURGY AND**  
**MATERIALS, UNIVERSITY OF**  
**BIRMINGHAM**

Historical Metallurgy Society Research in Progress Meeting

Tuesday the 29th November, 2016 to be held in the Department of Metallurgy and Materials, University of Birmingham

This meeting is aimed at a wide variety of contributors, from historical and archaeological metallurgists to excavators, historians and economists. If you are working, or have just finished working, on a project related to archaeological or historical metallurgy, we would like to hear from you. We are particularly interested in bringing together contract and public sector archaeologists with academic researchers, and in fostering links between the different disciplines studying metallurgy and related activities. Whether you are a student, a researcher, an interested non-specialist, or a professional excavator, we invite you to meet others working in this field and present your research to an interested community.

Proposals for 10-15 minute oral papers are welcomed from anyone undertaking work in any area of ancient, historical, or industrial metallurgy, and from other researchers whose focus is of relevance to this subject. Please send your abstract to [hmsRinPconf@hist-met.org](mailto:hmsRinPconf@hist-met.org) by the 13th of July.

The HMS prize for the Best Student Research is offered for the best presentation by a student (or recent graduate within 12 months of graduation) at the annual Research in Progress meeting as chosen by those members of HMS Council present at the meeting. So if you are eligible please indicate when you submit your abstract.

***NEW for 2016.*** In addition to the prize The Historical Metallurgy Society is offering a small number of travel bursaries for students presenting papers. If you are a student and would like to be considered please indicate with your submission.

## **CALL FOR SESSIONS: MARY JAHARIS CENTER SPONSORED PANEL AT LEEDS 2017**

The Mary Jaharis Center for Byzantine Art and Culture seeks proposals for a Mary Jaharis Center sponsored session at the 24th International Medieval Congress, University of Leeds, July 3–6, 2017. We invite session proposals on any topic relevant to Byzantine studies.

The thematic strand for the 2017 IMC is “Otherness.” See the IMC Call for Papers ([https://www.leeds.ac.uk/ims/imc/imc2017\\_call.html](https://www.leeds.ac.uk/ims/imc/imc2017_call.html)) for additional information about the theme and suggested areas of discussion.

Session proposals should be submitted through the Mary Jaharis Center website site (<http://maryjahariscenter.org/sponsored-sessions/23rd-international-medieval-congress/>). The deadline for submission is **August 31, 2016**. Proposals should include:

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Title

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100-word session abstract

\*\*

Session moderator and academic affiliation

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Information about the three papers to be presented in the session. For each paper: name of presenter and academic affiliation, proposed paper title, and 100-word abstract CV

Successful applicants will be notified by mid-September if their proposal has been selected for submission to the International Medieval Congress. The Mary Jaharis Center will submit the session proposal to the International Medieval Congress and will keep the potential organizer informed about the status of the proposal.

If the proposed session is approved, the Mary Jaharis Center will reimburse session participants (presenters and moderator) up to \$600 maximum for EU residents and up to \$1200 maximum for those coming from outside Europe. Funding is through reimbursement only; advance funding cannot be provided. Eligible expenses include conference registration, transportation, and food and lodging. Receipts are required for reimbursement.

The session organizer may act as the moderator or present a paper. Participants may only present papers in one session.

Please contact Brandie Ratliff ([mjcbac@hchc.edu](mailto:mjcbac@hchc.edu)), Director, Mary Jaharis Center for Byzantine Art and Culture with any questions.

## **"PIGMENT IDENTIFICATION" WORKSHOP,** **THE UNIVERSITY OF AMSTERDAM, 30** **AUGUST - 2 SEPTEMBER 2016**

This workshop is given by Dr. Nicholas Eastaugh.

This course gives an introduction to the use of Polarised light microscopy (PLM) for the identification of historical pigments in conservation and conservation science. Despite the advent of newer methods, PLM has maintained a key place in this field as a routine and cost-effective approach to the determination of materials to be found on painted artefacts. Covering everything from choice and use of microscopes, optical features of historical pigments, to other types of analysis that complement PLM, the course will emphasise the application of PLM to real-world problems, including hands-on practice and case studies illustrating the use of the technique.

The workshop is given in the Ateliergebouw, one of the locations of the University of Amsterdam.

Maximum 10 participants

For further information, program and registration see: [URL:http://www.conservation-restoration-training.nl/continuing-professional-development/programme](http://www.conservation-restoration-training.nl/continuing-professional-development/programme)

You can also contact the team of Continuing Professional Development from the program Conservation and Restoration of cultural heritage:  
pe-CenR@uva.nl

Drs. Angele Goossens

Coordinator Continuing Professional Development Programme Conservation and Restoration of Cultural Heritage University of Amsterdam Johannes Vermeerplein 1  
1071 DV Amsterdam

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**UNION INTERNATIONALE DES SCIENCES  
PREHISTORIQUES ET PROTOHISTORIQUES  
CONGRESS, AUSTRALIAN  
ARCHAEOLOGICAL ASSOCIATION  
CONFERENCE, 4-7 SEPTEMBER 2017,  
MELBOURNE, AUSTRALIA**

**CALL FOR THEMES AND SESSIONS**

***MAKING CONNECTIONS: GLOBAL ARCHAEOLOGICAL PERSPECTIVES***

The 2017 UISPP Congress will be co-hosted with the AAA 2017 Conference in Melbourne. It will be the largest archaeological meeting ever held in the southern hemisphere. It will attract leading researchers from across the globe from a diverse range of fields. The meeting will provide an ideal opportunity for everyone in the Australian, New Zealand and Southeast Asian regions to showcase their research to an international audience.

UISPP 2017/AAA 2017 in Melbourne welcomes session proposals from anyone with an interest in the prehistoric and proto-historic sciences, that is, with an interest in human activities in the past. We are especially encouraging people to propose sessions that are co-organised by members of a UISPP Scientific Commission with colleagues from Southeast Asia, Australia or the Pacific. Similarly, we are encouraging members of the AAA to reach out and organise sessions with colleagues from other countries. However, we also welcome proposals from within UISPP's Scientific Commissions, solely from AAA members, as well as from archaeologists across the globe.

Anyone can propose a session, subject to approval by the Academic Steering Committee in consultation with UISPP or AAA, as appropriate.

Sessions of presentations may be proposed that:

- a) already have a full list of papers (that have already been agreed in advance), or,
- b) do not have any pre-arranged papers (in which case, other participants may select that session when submitting an abstract and papers may be allocated to that session by the Academic Steering Committee in discussion with the Session Organisers).

Ordinarily, sessions will ordinarily run for 90 minutes, and comprise at least six 15-minute papers. The Academic Steering Committee will negotiate with Session Organisers to merge or redistribute any proposed sessions that do not have sufficient papers. Ordinarily, an individual can only co-organise two sessions, except in exceptional circumstances.

UISPP 2017/AAA 2017 also welcomes session proposals that are structured to encourage debate. These **archaeological dialogues** may take a flexible format, including round

table discussions or short presentations which open up an issue for a debate. Each archaeological dialogue should have at least four participants and a chair.

If you have an idea for a Session and are unsure who to contact to develop it into a proposal, or need contacts with people in other regions, then please contact:

UISPP: Tim Denham <[tim.denham@anu.edu.au](mailto:tim.denham@anu.edu.au)> or David Frankel [d.frankel@latrobe.edu.au](mailto:d.frankel@latrobe.edu.au)

AAA: Andy Herries [a.herries@latrobe.edu.au](mailto:a.herries@latrobe.edu.au)

### **Guide for On-Line Submission**

To propose a session, you will need to fill out the following fields on the UISPP 2017/AAA 2017 website:

*(1) Names of the organisers, affiliations and email contact*

Provide the details of the two or more people organising the proposed session.

*(2) Title and summary of proposed session*

Provide a succinct and clear title, together with a summary of about 150 words. This should provide an overview of the session's subject matter and also a brief statement as to its significance.

*(3) Participants*

Indicate whether the session is closed or open to additional participants. If closed, list the names of those who have agreed to attend and present a paper.

*(4) Congress/Conference Affiliation*

Session organisers are requested to indicate whether their proposal is affiliated with:

- UISPP – especially for Scientific Commissions
- AAA – most likely for proposals by AAA members focussed on the Australian region
- Other – another organisation
- None – no organisation affiliation

*(5) Themes*

Session organisers are also asked to select a theme that their Session is most closely affiliated with. If people are uncertain, then indicate accordingly, and the session will be allocated to a theme by the Academic Steering Committee.

*(6) Type of Session*

Indicate whether a sessions of presentations or an archaeological dialogue.

*(7) Keywords*

Indicate four keywords for your proposed session.

*(8) Comment*

Any additional information to the Academic Steering Committee/Scientific Committee.

Please visit the site: <http://www.uispp2017.com.au/>

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David Frankel PhD FAHA FSA  
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Archaeology  
La Trobe University  
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[sima@astromeditations.com](mailto:sima@astromeditations.com)

[www.astromeditations.com](http://www.astromeditations.com)

XVIII World UISPP/IUPPS Congress

International Union of Prehistoric and Protohistoric Sciences

Melbourne, 4-7 September 2017

[www.uispp2017.com.au](http://www.uispp2017.com.au)

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**4<sup>TH</sup> INTERNATIONAL CONFERENCE ON  
ENVIRONMENTAL RADIOACTIVITY  
(ENVIRA2017), VILNIUS, LITHUANIA, MAY  
29 - JUNE 2, 2017**

Dear colleagues,

As agreed during the ENVIRA2015 conference held in Thessaloniki, we are delighted to invite you to attend the 4<sup>th</sup> International Conference on Environmental Radioactivity (ENVIRA2017), which will be held in Vilnius, Lithuania, from May 29 to June 2, 2017.

The ENVIRA2017 will focus on the theme “Radionuclides as Tracers of Environmental Processes”. A first circular with more information is under preparation.

You may also check the progress on organization of the conference on the web. <http://envira2017.ftmc.lt>.

In the case you need additional information, please contact us at [envira2017@ftmc.lt](mailto:envira2017@ftmc.lt)

We would appreciate to seeing you at the meeting in Vilnius, the historic and beautiful city.

On behalf of the Organizing committees,

Galina Lujaniene  
Pavel Povinec

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## **2<sup>ND</sup> INTERNATIONAL RADIOCARBON IN THE ENVIRONMENT CONFERENCE, 3 –7 JULY, 2017, DEBRECEN, HUNGARY, FIRST CIRCULAR**

Continuing the successful first 14C in the Environment Conference held in Belfast in 2014, we encourage discussion of recent developments and future perspectives of science with radiocarbon in the fields of ecology and environmental change.

The conference will be organized by the Institute for Nuclear Research (Atomki) of the Hungarian Academy of Sciences, Debrecen. The Hertelendi Laboratory of Environmental Studies at Atomki has four decades' experience in radiocarbon studies ([www.radiocarbon.hu](http://www.radiocarbon.hu)).

### **TOPICS**

The scientific scope of the conference follows most of the well-received features of the previous Radiocarbon in the Environment Conference:

Radiocarbon in

- the atmosphere (CO<sub>2</sub> and other trace gases, aerosol)
- terrestrial environment (tree rings, macrofossils, sediments, animals, etc.)
- freshwater environment (including groundwater and karstic systems)
- marine environment
- past and recent climate studies (regional and global changes)
- in-situ isotope applications (in rocks and meteorites)
- anthropogenic (fossil and nuclear) pollution, (bio)fuels

Related studies will also be welcome, as well as stable isotopes and a session on development and progress in techniques, methods and statistical tools.

For details visit the conference web site at <http://c14env2017.atomki.mta.hu/>

You can follow this conference news via Facebook: [www.facebook.com/14C2017](https://www.facebook.com/14C2017)

E-mail contact: [14cenv2017@gmail.com](mailto:14cenv2017@gmail.com)

We look forward to welcoming you in Debrecen, Hungary!

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

**THE FULBRIGHT SCHOLAR PROGRAM**  
**OFFERS TEACHING, RESEARCH OR**  
**COMBINATION TEACHING AND RESEARCH**  
**AWARDS IN OVER 125 COUNTRIES FOR**  
**THE 2017-2018 ACADEMIC YEAR**

The Fulbright Scholar Program offers teaching, research or combination teaching and research awards in over 125 countries for the 2017-2018 academic year. Opportunities are available for college and university faculty and administrators as well as for professionals, artists, journalists, scientists, lawyers, independent scholars and many others.

This year, the Fulbright Scholar Program is offering over 20 awards in the field of Archaeology. Opportunities include:

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For eligibility factors, detailed application guidelines and review criteria, please follow this link: <http://cies.org/program/core-fulbright-us-scholar-program>. You may also wish to register for one of our webinars or join My Fulbright, a resource center for applicants interested in the program. **Applicants must be U.S. citizens** and the current competition will close on **August 1, 2016**.

I am happy to answer any questions you may have regarding any of the opportunities listed above or the Fulbright Scholar Program in general. Please contact Caitlin McNamara at [scholars@iie.org](mailto:scholars@iie.org) or 202-686-6245 to arrange a virtual advising session.

*The Fulbright Program, sponsored by the U.S. Department of State's Bureau of Educational and Cultural Affairs, is the U.S. government's flagship international exchange program and is supported by the people of the United States and partner countries around the world.*

## **SELF-FUNDED PHD IN SALT RESISTANT MORTARS FOR THE REPAIR OF HISTORIC STRUCTURES, SHEFFIELD HALLAM UNIVERSITY**

Applications are invited for a self-funded PhD project titled "High porosity salt resistant mortars for the repair of historic structures" based in the Materials and Engineering Research Institute at Sheffield Hallam University.

Repair mortars to be applied on wet and salt loaded substrates within a historic structure should both be compatible with the original materials and suffer no deterioration following the movement and crystallisation of salts in the mortar.

The aim of this project is to develop a salt resistant mortar where the salts crystallise throughout its pore structure without causing damage to the mortar or the host material. This is to be achieved by fine tuning of the pore structure of hybrid mortars comprising two different types of binders and at least three admixtures.

This project will expand on existing research and also include extensive experimental work for investigating the influence of different parameters such as aggregate and substrate characteristics on mortar properties.

This is an unfunded PhD project, for candidates who are sponsored or who have their own funding.

Students will normally need to hold, or expect to gain, a First or Second Class Honours degree in Materials Science, Engineering, Building, Conservation Science, Architecture, Physics or related discipline.

General information about the Materials and Engineering Research Institute can be found at: [URL:https://www.shu.ac.uk/research/meri/](https://www.shu.ac.uk/research/meri/)

For informal enquiries about the project, please contact Dr Vincenzo Starinieri [v.starinieri@shu.ac.uk](mailto:v.starinieri@shu.ac.uk)

For instructions on how to apply, please email our direct student services on [meri-student@shu.ac.uk](mailto:meri-student@shu.ac.uk)

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## **5 NEW POSITIONS IN TERRESTRIAL PALAEOENVIRONMENTAL RECONSTRUCTION - MAINZ, GERMANY**

Dear colleagues,

please circulate widely!!

A new Max Planck Research Group in Terrestrial Palaeoclimates will be established at the Max Planck Institute for Chemistry in Mainz, Germany, from 2017. The focus of the group will be the interactions between climate, vegetation and landscapes in the Eurasian loess steppe over Quaternary timescales. The independent research group will work in close cooperation with the Department for Climate Geochemistry.

We invite applications for five new positions within the group (additional information is available at <http://www.mpic.de/karriere/stellenangebote.html> and see attached):

1. Post-doctoral position in palaeoclimate reconstruction using geochemical proxy methods. We seek a researcher to apply and develop novel new geochemical approaches to quantitative palaeoclimate reconstruction in loess. This research position may begin in spring-summer 2017, and is a 3.5 year appointment.
2. Post-doctoral position in palaeoclimate reconstruction using palaeoecological proxies. We seek a researcher to apply and develop palaeoecological methods for quantitative palaeoclimate reconstruction in loess. The ideal candidate will have experience with phytoliths as a palaeoecological proxy, and with the development of transfer functions using palaeoecological data. This research position may begin in spring-summer 2017, and is a 3.5 year appointment.
3. PhD candidate in Quaternary geochronology (luminescence dating). The aim of the project is to investigate the potential of new materials for luminescence dating, as well as to apply standard and new geochronological methods to provide chronological frameworks for loess. This position will begin in winter-spring 2017. The candidate will receive full funding for 3 years with an optional fourth year as required.
4. PhD candidate in palaeoclimate reconstruction using geochemical proxy methods. The aim of the project is to develop novel new geochemical approaches for quantitative palaeoclimate reconstruction in loess. This position will begin in winter-spring 2017. The candidate will receive full funding for 3 years with an optional fourth year as required.
5. Laboratory technician in luminescence dating and palaeoecology. This position will begin in spring 2017, and is a 3 year appointment at 50% of full time capacity. The position is appointed by the MPI-C in Mainz, with the major laboratory component to be based at the Curt-Engelhorn Centre for Archaeometry in Mannheim.

For further information please contact Dr. Kathryn Fitzsimmons ([kathryn\\_fitzsimmons@eva.mpg.de](mailto:kathryn_fitzsimmons@eva.mpg.de)). Applications should be sent by email.

Review of the applications will begin 01.08.2016.

I look forward to hearing from you or your colleagues, students and postdocs.



Kind regards,

Kathryn Fitzsimmons

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## **ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS**

### **GREEK DIASPORA GRANTS**

Αγαπητοί συνεργάτες,

Σας ενημερώνουμε τα ελληνικά ιδρύματα Ανώτατης Εκπαίδευσης είναι επιλέξιμα να υποβάλουν πρόταση συνεργασίας με ακαδημαϊκούς ελληνικής καταγωγής που εργάζονται σε Πανεπιστήμια στις Ηνωμένες Πολιτείες και τον Καναδά με σκοπό την ανάπτυξη συνεργασιών σε ερευνητικούς και εκπαιδευτικούς τομείς. Η δράση αυτή χρηματοδοτείται από το ίδρυμα Σταύρος Νιάρχος και η διαχείριση των σχεδίων γίνεται από το International Institute of Education, στις ΗΠΑ. Η καταληκτική ημερομηνία υποβολής αιτήσεων είναι η 1<sup>η</sup> Σεπτεμβρίου 2016.

Για περισσότερες πληροφορίες παρακαλούμε δείτε τον ακόλουθο σύνδεσμο:  
<http://www.iie.org/Programs/Greek-Diaspora-Fellowship-Program#.V0-5JTV96Uk>

Παρακαλούμε να ενημερώσετε σχετικά τα μέλη ΔΕΠ και τις Αρχές του ιδρύματός σας.

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**CULTTECH MSC PROGRAMME,**  
**LABORATORY OF ARCHAEOLOGY OF**  
**THE UNIVERSITY OF THE PELOPONNESE,**  
**KALAMATA, GREECE**

Applications are open for the 2016-2017 academic year.

The **CultTech** MSc programme is organized by the Laboratory of Archaeometry of the University of the Peloponnese, **Kalamata**, Greece.

The language of the programme is **English** and the duration is **one full year**.

Students from the fields of archaeology, cultural heritage management, conservation, materials science and engineering are welcomed to apply.

Courses for the new academic year will start on Monday 3 October 2016.

**Further information:**

Check our website ([culttech.uop.gr](http://culttech.uop.gr)) and our facebook group ([CultTech-MSc in Cultural Heritage Materials, UOP](#))

Mail: [culttech@uop.gr](mailto:culttech@uop.gr) / Phone: (0030) 27210 65145

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## **ΕΚΠΑΙΔΕΥΤΙΚΟ ΣΕΜΙΝΑΡΙΟ, «ΘΕΜΑΤΑ ΔΙΑΓΝΩΣΗΣ, ΣΥΝΤΗΡΗΣΗΣ ΚΑΙ ΔΙΑΧΕΙΡΙΣΗΣ ΙΣΤΟΡΙΚΩΝ ΑΡΧΕΙΑΚΩΝ ΣΥΛΛΟΓΩΝ», ΤΕΙ ΑΘΗΝΑΣ 15 - 29.9.2016**

Σας ενημερώνουμε ότι δημοσιεύθηκαν στην ιστοσελίδα του σεμιναρίου [articon.lab.teiath.gr/seminar/](http://articon.lab.teiath.gr/seminar/) η 2η και η 3η ανακοίνωση με αναλυτικές πληροφορίες σχετικά με τη [θεματολογία](#), το [πρόγραμμα](#) και τις [οδηγίες εγγραφής](#).

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## ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

# TECHNICAL STRATEGIES FOR CONSERVATION OF EARTHEN ARCHAEOLOGICAL ARCHITECTURE

Dear colleagues and friends,

It might be of your interest to know about a recent article published by Luis Fernando Guerrero, Tony Crosby and I.

**Title:**

*"Technical Strategies for Conservation of Earthen Archaeological Architecture"*

**Publication:**

International Journal of *Conservation and Management of Archaeological Sites*, from *Taylor & Francis Online*, [Volume 17](#), [Issue 3](#), 2015.

**Abstract:**

The preservation of earthen architectural heritage is extremely complex due to the diversity of its constituent materials and potentially rapid physical deterioration.

Interventions on historic earthen architecture throughout the world have shown very distinct levels of success, but there is no single procedure or combination of conservation procedures that guarantee success.

One of the problems is the lack of knowledge about the behaviour of soil as the material component, and its relationships both with other materials, and associated natural and cultural environments.

This article analyses some technical considerations that have influenced the preservation of earthen archaeological remains, through critical analysis of the existing bibliographic references from the proceedings of specialized international conferences that have taken place in the last twenty years.

**Keywords:**

Earthen architecture, conservation, preservation, stabilisation, preventive measures, structural reinforcement, surface coating

**DOI:**

10.1080/13505033.2015.1129799

**Article available at:**

<http://www.tandfonline.com/doi/abs/10.1080/13505033.2015.1129799?journalCode=ycma20>

As we do not have paid subscription to the journal, we are not able to send you the final article's content. I am sorry for that.

Hope the article can be of help.

Best wishes,  
Mariana

\*\*\*\*\*

Prof. Mariana Correia

PhD, Msc, DPEA-Terre, Arch. Dip.  
ESG President of the Board of Directors

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Tristan Carter, Daniel A. Contreras, Kathryn Campeau, Kyle Freund

<https://journals.equinoxpub.com/index.php/JMA/article/view/31014>

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## **"THE GENETIC STRUCTURE OF THE WORLD'S FIRST FARMERS" (MANY AUTHORS)**

### **Abstract**

We report genome-wide ancient DNA from 44 ancient Near Easterners ranging in time between ~12,000-1,400 BCE, from Natufian hunter-gatherers to Bronze Age farmers. We show that the earliest populations of the Near East derived around half their ancestry from a 'Basal Eurasian' lineage that had little if any Neanderthal admixture and that separated from other non-African lineages prior to their separation from each other. The first farmers of the southern Levant (Israel and Jordan) and Zagros Mountains (Iran) were strongly genetically differentiated, and each descended from local hunter-gatherers. By the time of the Bronze Age, these two populations and Anatolian-related farmers had mixed with each other and with the hunter-gatherers of Europe to drastically reduce genetic differentiation.

The impact of the Near Eastern farmers extended beyond the Near East: farmers related to those of Anatolia spread westward into Europe; farmers related to those of the Levant spread southward into East Africa; farmers related to those from Iran spread northward into the Eurasian steppe; and people related to both the early farmers of Iran and to the pastoralists of the Eurasian steppe spread eastward into South Asia.

Please visit the site: <http://biorxiv.org/content/early/2016/06/16/059311> is a downloadable article

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## **ISOTOPIC EVIDENCE FOR EARLY TRADE IN ANIMALS BETWEEN OLD KINGDOM EGYPT AND CANAAN**

Elizabeth R. Arnold, Gideon Hartman, Haskel J. Greenfield, Itzhaq Shai, Lindsay E. Babcock, Aren M. Maeir

### **Abstract**

Isotope data from a sacrificial ass and several ovicaprines (sheep/goat) from Early Bronze Age household deposits at Tell es-Safi/Gath, Israel provide direct evidence for the movement of domestic draught/draft and husbandry animals between Old Kingdom Egypt (during the time of the Pyramids) and Early Bronze Age III Canaan (ca. 2900-2500 BCE). Vacillating, bi-directional connections between Egypt and Canaan are known throughout the Early Bronze Age, but here we provide the first concrete evidence of early trade in animals from Egypt to Canaan.

**Please visit the site:**

<http://journals.plos.org/plosone/article?id=10.1371%2Fjournal.pone.0157650> [Go there to download]

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## **MAKING VISIBLE: THREE-DIMENSIONAL GIS IN ARCHAEOLOGICAL EXCAVATION, STEFANIA MERLO**

This book discusses the theoretical aspects and practical applications of GIS for intra-site analysis in archaeology. It has been previously argued that GIS is unable to manipulate three-dimensional data and therefore to represent an archaeological excavation, since three-dimensionality is the main characteristic of the excavated record. This book explores the extent to which archaeological data and GIS structures parallel one another and, through this discussion, it challenges ideas around the ability of the traditional archaeological record to represent multidimensional spaces. The book then argues that three-dimensional data and the use of modelling techniques in a three-dimensional GIS allow for a better and more nuanced understanding of the excavated archaeological record. Practical examples are provided from two specific excavation scenarios: the Neolithic site of Kouphovouno in Greece and the Mesolithic to Early Neolithic Hoge Vaart excavation in the Netherlands. A conceptual framework for representing spatial (and temporal) excavation information is outlined, and provides a blueprint for creating a model for storing, manipulating and analysing archaeological excavation data.

**Stefania Merlo** is an archaeologist and teaches GIS in the School of Geography, Archaeology and Environmental Studies of the University of the Witwatersrand (Johannesburg, South Africa). She completed a BA in Classics at the University of Padova in 2000, followed by an MPhil and PhD from the University of Cambridge. Her research focuses on understanding the transformations of cultural landscapes through long-term, multidimensional models that incorporate large datasets on environment, culture and society with the use of quantitative and computational methods, in particular geographic information systems and remote sensing. Her areas of interest are the arid landscapes of Southern Libya, Algeria, Botswana and South Africa, where she has conducted fieldwork in the past years and documented settlement strategies from the first millennium AD to the present. More recently, she has worked at the development of participatory GIS approaches for the documentation of the recent past in the island of Mograt (Sudan) and at the integration of cultural information in national spatial data infrastructures that are used for decision making and national development policies in Southern Africa.

RSP: £39 / €58.50 / US\$78

ISBN: 9781407314723

186 pages; Illustrated throughout in colour and black and white: 11 tables, 114 figures (including 3 black and white photographs and 5 colour photographs); CD included

[Click here to order online](#)

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## **EΙΔΗΣΕΙΣ - NEWS RELEASE**

### **THIS IS WHERE JUDEAN REBELS AND REFUGEES HID DURING THE REVOLT AGAINST THE ROMAN EMPIRE 2,000 YEARS AGO IN BAR KOCHBA REBELS' CAVES, SALVAGING WHAT THE THIEVES LEFT BEHIND - ARCHAEOLOGISTS CONCLUDE 3-WEEK EXCAVATION OF THE JUDEAN DESERT'S CAVE OF THE SKULLS, THE LARGEST UNDERTAKING OF ITS KIND IN 60 YEARS, BY ILAN BEN ZION**

As the sun beat down overhead, we clamber one at a time down the gravelly slope of the wadi toward the Cave of the Skulls. In a cavern over 800 feet above the floor of this desert canyon, archaeologists have been toiling to salvage meager clues about life nearly 2,000 years ago and maybe, with luck, uncover the ultimate find: scrolls.

Before rounding the cliffside to the cave's yawning maw, an acrid animal odor strikes the nostrils, then the metronomic rattle of sifting and chatter of dozens of workers comes into focus. The site is a hive of activity, with volunteers and archaeologists digging in the far reaches of the cavern and hauling carefully labeled buckets of soil to the entrance, where it's sifted, sorted and cataloged with meticulous precision. A constant pall of fine dust chokes the air, requiring the use of blue surgical masks. Everyone is caked in dun dirt, their faces like miners'.

Sixty years after initial scientific surveys of the caves in the Judean Desert, the Israel Antiquities Authority on Thursday wrapped up three weeks of excavations at one of the largest caverns in the limestone cliffs of Nahal Tze'elim. It's the biggest undertaking of its kind in the arid region south of Jerusalem since the 1960s.

The dozens of caves lining the gorges provided shelter for Judean rebels and refugees during the revolt against the Roman Empire in the second century CE. In a cave not far from the excavations, archaeologists in 1960 found papyrus letters from the Bar Kochba revolt of 132-136. The Cave of the Skulls was so named after the remains of seven people were found inside during surveys in 1953.

Today, scientists hope to learn more about the people who inhabited the caves during the second Judean revolt against Rome, which resulted in the exile of Jews, and Emperor Hadrian's renaming Jerusalem Aelia Capitolina and Judea Syria Palestina.

The limestone cavern is cool even in the sweltering early-June heat. The arid atmosphere and stable temperature provide an ideal environment for the preservation of organic materials that would otherwise decompose, including parchment, papyrus, cloth and rope. An IAA sting in 2009 busted an antiquities thief in Jerusalem in possession of a papyrus scroll, which he said was plundered from the Cave of the Skulls, prompting state

archaeologists to move to protect the site. The text said it was written "four years after the destruction of Israel," leading scholars to believe that it dated to 138 or 139 CE, four years after the Bar Kochba uprising was crushed.

The urgency to plumb the site's depths was heightened two years ago, when the IAA's antiquities theft prevention unit busted six Palestinians trying to steal artifacts from the cave. Among the objects found in their possession was a Roman-era lice comb, but the robbers were likely after more profitable items such as scrolls. The plundering of the cave caused "critical damage to archaeological remains, and irreversible damage to archaeological strata," the indictment against the men charged.

The six, residents of the West Bank, were eventually found guilty by an Israeli court and sentenced to 18 months in prison.

After the bust, the IAA decided to go on the offensive but lying in wait to catch thieves red-handed in a landscape like the Judean Desert is a game of whack-a-mole. The excavation in the Cave of the Skulls aims not only to glean what valuable scientific information remains, but also salvage any artifacts - scrolls included - that may still be inside.

Amir Ganor, head of the IAA's antiquities theft prevention unit and one of the leaders of the dig, hailed the excavation as "very successful," saying the dig already turned up tiny scraps of papyrus. It wasn't clear just yet whether they bore inscriptions, however, he noted Wednesday.

Uri Davidovich, a post-doctoral research fellow at Tel Aviv University and Hebrew University, headed the dig. Taking a break from overseeing the sorting and examination of tiny fragments from amid soil and pebbles, he explained that the excavation yielded a trove of items shedding light on daily life for the inhabitants of the cave, likely refugees fleeing the Roman army during the second Jewish revolt against Rome.

"Among the things connected to day-to-day life were pottery fragments and a few stone tools, [but] mostly the objects that characterize the Judean Desert caves - where, because of the dry conditions, organic materials are preserved - textiles, cords, fabrics, braids, leather and wood items," he said over the bustle of activity. Also on that list were spindle whorls for weaving, awls, and scraps of leather and papyrus, and a wooden comb ("what's more intimate than that?" Davidovich said). The vast majority of the finds were animal bones, some the remnants of the Judeans' dinner, others brought in by hyenas or other wild animals over the centuries. A few human bones were unearthed as well.

Davidovich speculated that several dozen refugees likely lived in the cave for several months during the tumultuous period of Rome's crackdown on the uprising. They probably came from villages south of modern-day Hebron, several kilometers north of the cave, bringing food and water with them. (There's also a spring at the bottom of the gorge, about 250 meters below.)

Despite the significant damage inflicted on the site by looters, Davidovich said there was still "archaeological meat" to be picked off the bones and other artifacts to be studied by scientists.

What sets the diggers apart from the looters is not just their objectives and intentions, but their methodology, explained Micka Ullman, a Hebrew University archaeologist specializing in speleology, or the study of caves. She was one of the handful of archaeologists on site. Surrounded by a stack of notebooks, she was tasked with painstakingly recording the precise location of each object's discovery, layer by layer.

"The key word is context," Ullman said. "A coin found in context is worth a thousand times more [to science] than one found without."

Sixty years ago, much of the seemingly insignificant material archaeologists hold on to today - olive stones, seeds and other fragments of organic material - would have been cast away and ignored. Specialists at the Hebrew University's labs will undertake the Sisyphean endeavor of scrutinizing those tiny objects to suss out data that will help construct a larger portrait of the cave's inhabitants.

Volunteers from around the country and the world enlisted to assist in the IAA's excavations. Nearly 500 in total cycled through over the course of the three-week dig, some staying a day or two and others a week or more. Some, such as Hadas Levmore, 35, of Jerusalem, had no experience in archaeology, but were captivated by the opportunity to participate.

"I've been reading a few books on archaeology lately, so I decided to go," she said. It was her first day on the site, and even though "most of what's here is poop - bat poop, bird poop," she's still as interested as ever in the science.

Hai Ashkenazi, an engineer-turned-Tel Aviv University doctoral student, joined to lend a hand to his colleagues running the dig. At the end of a day at the office in his previous job, his brain was fried, he said. "Here at the end of the day your body is wiped but your head is clear."

Ganor, the IAA official, said that his organization tentatively approved funding for an additional season of excavations in Nahal Tze'elim, but that plans had yet to be drawn up.

Visiting the dig was a chance to reveal the backbreaking, unromantic side of archaeology - the real hard labor and menial attention to the kind of detail that doesn't make it into headlines and is ignored in fiction like Indiana Jones. The team at the Cave of the Skulls found no golden chalices, no monumental temples, not even a much-sought-after scroll. Perhaps in a year, after extensive study of the materials from the Cave of the Skulls, they may have a bit more insight into the period.

[URLs and captions of the pictures accompanying the article. Seven of the eight pictures may also be viewed as a slideshow.]

[http://cdn.timesofisrael.com/uploads/2016/06/IMG\\_20160601\\_141030-965x543.jpg](http://cdn.timesofisrael.com/uploads/2016/06/IMG_20160601_141030-965x543.jpg)

[http://cdn.timesofisrael.com/uploads/2016/06/IMG\\_20160601\\_141030.jpg](http://cdn.timesofisrael.com/uploads/2016/06/IMG_20160601_141030.jpg) [enlargeable picture] Volunteers and archaeologists working in the Cave of the Skulls, overlooking Nahal Tze'elim in the Judean Desert on June 1, 2016.

(Ilan Ben Zion/Times of Israel staff)

[http://cdn.timesofisrael.com/uploads/2016/06/IMG\\_20150325\\_154206.jpg](http://cdn.timesofisrael.com/uploads/2016/06/IMG_20150325_154206.jpg) [enlargeable picture] Nahal Tze'elim, overlooking the Dead Sea, in the Judean Desert.  
(Ilan Ben Zion/Times of Israel staff)

<http://cdn.timesofisrael.com/uploads/2014/12/DSCN3770.jpg> [enlargeable picture] The Judean Desert's Cave of Skulls, where six Palestinians illegally dug for antiquities and were arrested on November 30, 2014.  
(Courtesy of the Israel Antiquities Authority)

[http://cdn.timesofisrael.com/uploads/2016/06/IMG\\_20160601\\_135921.jpg](http://cdn.timesofisrael.com/uploads/2016/06/IMG_20160601_135921.jpg) [enlargeable picture] Volunteers sift through stones in the Cave of the Skulls, in the Judean Desert on June 1, 2016.  
(Ilan Ben Zion/Times of Israel staff)

[http://cdn.timesofisrael.com/uploads/2016/06/IMG\\_20160601\\_132439.jpg](http://cdn.timesofisrael.com/uploads/2016/06/IMG_20160601_132439.jpg) [enlargeable picture] Hebrew University archaeologist Micka Ullman speaks to reporters with a map of the Cave of the Skulls, in the Judean Desert on June 1, 2016.  
(Ilan Ben Zion/Times of Israel staff)

[http://cdn.timesofisrael.com/uploads/2016/06/IMG\\_20160601\\_130348.jpg](http://cdn.timesofisrael.com/uploads/2016/06/IMG_20160601_130348.jpg) [enlargeable picture] Volunteers dig in the Cave of the Skulls in the Judean Desert on June 1, 2016.  
(Ilan Ben Zion/Times of Israel staff)

[http://cdn.timesofisrael.com/uploads/2016/06/IMG\\_20160601\\_140114.jpg](http://cdn.timesofisrael.com/uploads/2016/06/IMG_20160601_140114.jpg) [enlargeable picture] Volunteers dig in the Cave of the Skulls in the Judean Desert on June 1, 2016.  
(Ilan Ben Zion/Times of Israel staff)

[http://cdn.timesofisrael.com/uploads/2016/06/IMG\\_20160601\\_135516.jpg](http://cdn.timesofisrael.com/uploads/2016/06/IMG_20160601_135516.jpg) [enlargeable picture] Volunteers in the Cave of the Skulls, in the Judean Desert on June 1, 2016.  
(Ilan Ben Zion/Times of Israel staff)

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Please visit the site: <http://www.timesofisrael.com/in-bar-kochba-rebels-caves-salvaging-what-the-thieves-left-behind/>

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## **KING TUT'S KNIFE WAS MADE FROM A METEORITE THIS DISCOVERY IS OUT OF THIS WORLD, BY DAVID MOYE**

Scientists say an iron knife buried with King Tut is truly out of this world.

The knife was made with iron that came from a meteorite, according to an article in the journal *Meteoritics and Planetary Science* published online last month.

The dagger in question was one of two found in the wrapping of King Tutankhamun's mummified body in 1925 by archaeologist Howard Carter. The first knife has a blade of gold, while the iron dagger has a gold handle, rock crystal pommel and jackal-decorated sheath.

The iron knife has puzzled researchers for 91 years, partially because ironwork was rare in ancient Egypt. Despite being more than 3,300 years old, the iron dagger shows no signs of rust, according to *The Guardian*.

Researchers from Milan Polytechnic, Pisa University, and the Egyptian Museum in Cairo studied the metal makeup of the iron knife using non-invasive, portable X-ray fluorescence spectrometry.

"Meteoric iron is clearly indicated by the presence of a high percentages of nickel," lead researcher Daniela Comelli of Milan Polytechnic told *The Telegraph*. "The nickel and cobalt ratio in the dagger blade is consistent with that of iron meteorites that have preserved the primitive chondritic ratio during planetary differentiation in the early solar system."

The researchers said they identified the exact meteorite that was the source of metal for the blade.

Comeli said her team examined all meteorites found within a radius of 2,000 kilometers from the Red Sea. That narrowed the possibilities to 20 iron meteorites. Only one of those had levels of nickel and cobalt similar to Tut's blade: a meteorite found near Mersa Matruh, Egypt, 16 years ago.

The finding suggests that the ancient Egyptians were aware in the 13th century B.C., about 2,000 years before Western culture, that rare chunks of iron fell from the sky.

Please visit the site: [http://www.huffingtonpost.com/entry/king-tut-knife-meteorite\\_us\\_574f586ee4b0c3752dcc7014](http://www.huffingtonpost.com/entry/king-tut-knife-meteorite_us_574f586ee4b0c3752dcc7014) [See also <http://www.nytimes.com/2016/06/03/world/middleeast/king-tuts-dagger-made-of-iron-from-the-sky-researchers-say.html>]

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## **UNDERWATER 'RUINS' OFF GREEK ISLAND CREATED BY BACTERIA MILLIONS OF YEARS AGO**

Site near Zakynthos predates civilization by millions of years and bears striking resemblance to Hellenic structures but is result of process called concretion.

Columns strewn across the seafloor, detached from their familiar circular bases; tiles as from an ancient Greek courtyard above the water's reach on an island nearby. A sunken city - or so the snorkelers thought.

Greek archaeologists who dove to the site near Alikanas Bay, off the island of Zakynthos, were baffled by the eerie scene they found 7-15ft (2-4 meters) down. Though the sunken debris looked like paved floors and colonnades, the divers could see no other signs of life: no pottery, coins, or shards of sculpture or art.

"They tried to decide whether they're actually Hellenic stonework," said Julian Andrews, a professor at the University of East Anglia (UEA) who assisted the research, "but couldn't find any evidence that it was other than these rather bizarre structures [which] looked like superficially like stonework."

In fact, the site predates civilization entirely. The "ruins" were created as long as 3m years before mankind is thought to have left Africa - 5m years before Troy, Athens or Alexander.

Microbes did it.

In a study published on Thursday by a joint team from the University of Athens and UEA, the researchers write that the site is not a lost city at all, but a natural if strange phenomenon.

The team used microscopy and x-rays to study the mineral content and texture of the formations. They found that methane had jetted, oozed and flowed from within the earth, through a subsurface fault still hidden by the seabed.

"The earth's crust is a rather leaky reservoir," Andrews said. "It's almost like a kind of plumbing system, if you like, in the sediment."

Bacteria that use the carbon in methane as fuel clustered near the tubes and cracks, consuming the gas and gradually leaving behind a calcium byproduct. Its reaction with oxidizing methane created a kind of natural cement, in a process called concretion.

The cylindrical "doughnut" shape of the column-like structures, Andrews said, was the result of microbes gathered round a central, gas-spewing hole.

The tile-like floor, he said, was caused by a slower, more diffuse seepage of methane. The reaction between the microbes living in the sediment and the gas was consequently more diffuse, creating a flat and seemingly paved texture on the seafloor.

The scientists published their findings in the journal Marine and Petroleum Geology.

Andrews said dolomite, the particular mineral contained in the cement, rarely creates such formations in shallow seas but they can be common to microbe-rich regions of the deep.

"They're found pretty much in all the oceans, in the Pacific, particularly off the west coast of the US," he said, adding that such formations are also found in the Atlantic and the Mediterranean.

"The microbes do much the same thing whether they're in deep or shallow settings. But the majority of the cases that have been reported are relatively deep water, sort of 100 meters down."

Natural gas is more likely to bleed out of the earth in deep water, and most undersea oil fields are found in the deep, making such formations more likely far below the range of divers.

Though this process is natural, Andrews said, it has an analogy to what humans do on land with hydraulic fracking. Through fracking, he said, "humans essentially speed up or enhance the phenomena".

**Please visit the site: <http://www.theguardian.com/world/2016/jun/02/greece-sunken-city-ruins-bacteria-colony-concretion> [Go there for pix]**

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**ARCHAEOLOGISTS FIND FIRST ANCIENT  
ORACLE TO APOLLO IN ATHENS THE  
WELL DATES BACK 1800 YEARS BUT THE  
PROPHECY AT THE SANCTUARY WAS  
EVIDENTLY MUCH OLDER,  
ARCHAEOLOGIST SAYS,  
BY PHILIPPE BOHSTROM**

An oracle well at least 1800 years old dedicated to the god Apollo has been discovered in Athens. Though the powers of the oracle at Delphi and others were famously plied by the ancient Greeks, this is the first ancient oracular edifice to Apollo to have been found in Athens itself, Dr. Jutta Stroszeck, director of the Kerameikos excavation on behalf of the German Archaeological Institute at Athens, told Haaretz. The well would have been used for hydromancy, a method of divination by means of water.

The ancients routinely sought oracular guidance not only on the future, for simple everyday matters, such as finding/keeping a lover, ahead of a journey, after falling ill, and so forth - or applying for asylum in the sanctuary.

The excavators also investigated a 2500-year-old bathhouse that served travelers and the people of Athens alike that was found in the current excavation season.

Kerameikos is smack in central Athens, just northwest of the Acropolis. That ancient gateway to the city marked the neighborhood of the potters. The whole area is lavishly watered by the Eridanos River, which flows through the city from east to west.

The Athenians built wells along the course of this river, some of them for public use.

"Water, and in particular drinking water, was sacred," Stroszeck says. "In Greek religion, it was protected by nymphs, who could become very mischievous when their water was treated badly."

To appease these emotionally precarious godlets, offerings such as miniature vessels containing liquids and other gifts were dedicated in the water.

**Holy water, nymph style**

The ancient Athenian neighborhood of Kerameikos (in Latin, Ceramicus) has been undergoing excavation since the 19th century, which is when a large sanctuary some 600 square meters in area, featuring a marble omphalos was brought to light.

The most famous omphalos was located in Delphi, believed by the Greeks to be the center of the world. (According to legend, Zeus sent off two eagles to find the middle of the world, and they collided at Delphi. The god then threw a stone from the sky that also fell into Delphi - and that is the stone still visible today at the Delphi shrine.)

Cleaning by the excavators in 2012 revealed that the omphalos had been meticulously mounted on a marble slab that, in turn, covered an opening. This prompted further investigation.

The omphalos was lifted carefully using a crane. Under it the archaeologists found a circular well.

The well was walled with clay cylinders and featured more than twenty inscriptions in Greek, all repeating the same phrase: "Come to me, O Paeon, and bring with you the true oracle". The term "Paeon" is one of the epithets that designated the Olympian god Apollo, son of Zeus and the god associated with ritual purification, oracular activity (and the arts).

### **Mysteries and sacred rites**

The neighborhood of Kerameikos included the ancient Athenian potters quarter (Demos Kerameon), including the monuments bordering its main street, which connected the ancient agora (marketplace) with the area of Plato's Academy. The area also contained an ancient cemetery featuring funerary monuments that had been erected along the processional road to Eleusis, where the mysteries were celebrated every year.

This whole area was characterized by transition: from civic to rural areas, and from the city of the living to the place of the dead.

"In such areas, the presence of divine and the supernatural were experienced intensively, which is why cult and mantic activities are dense in such areas," Stroszeck told Haaretz, adding that a fragment of a prayer common to the participants in the Eleusinian cult was found in a well right by the oracle well.

The many shrines discovered in Kerameikos show that it was an important center for cultic activity.

For instance, the oracle to Apollo was found inside in a sanctuary where Artemis Soteira ('She who saves') and Apollon Paian ('He who helps') were venerated. Other gods protected public order, justice, children and the personal health of their worshippers.

The excavations have also investigated the wells and water supply of a bathhouse about 60 meters outside the city-gate on the road to the Academy - which has to be the spa mentioned by the Greek rhetorician Isaios, and referred to by Aristophanes.

It was a public, not a private bathhouse, and it existed from the Classical to the Hellenistic times (5th-3rd century BCE). The place was frequented by travellers, Athenians (for example teenage boys undergoing formal education, the ephebs), craftsmen - such as potters, and by the prostitutes gathering in the area around the city gates.

**Please visit the site: <http://www.haaretz.com/jewish/archaeology/1.723632> [Go there for pix and better format]**

## **FARMING WAS SPREAD INTO AND ACROSS** **EUROPE BY PEOPLE ORIGINATING IN** **MODERN-DAY GREECE AND WESTERN** **TURKEY**

This week, an international research team led by paleogeneticists of Johannes Gutenberg University Mainz publishes a study in the journal *Proceedings of the National Academy of Sciences* of the United States of America showing that early farmers from across Europe have an almost unbroken trail of ancestry leading back to the Aegean.

For most of the last 45,000 years Europe was inhabited solely by hunter-gatherers. About 8,500 years ago a new form of subsistence - farming - started to spread across the continent from modern-day Turkey, reaching central Europe by 7,500 years ago and Britain by 6,100 years ago. This new subsistence strategy led to profound changes in society, including greater population density, new diseases, and poorer health. Such was the impact of farming on how we live that scientists have debated for more than 100 years how it was spread across Europe. Many believed that farming was spread as an idea to European hunter-gatherers but without a major migration of farmers themselves.

This week, an international research team led by paleogeneticists of Johannes Gutenberg University Mainz (JGU) publishes a study in the journal *Proceedings of the National Academy of Sciences* of the United States of America showing that early farmers from across Europe have an almost unbroken trail of ancestry leading back to the Aegean. The scientists analyzed the DNA of early farmer skeletons from Greece and Turkey. According to the study, the Neolithic settlers from northern Greece and the Marmara Sea region of western Turkey reached central Europe via a Balkan route and the Iberian Peninsula via a Mediterranean route. These colonists brought sedentary life, agriculture, and domestic animals and plants to Europe. During their expansion they will have met hunter-gatherers who lived in Europe since the Ice Age, but the two groups mixed initially only to a very limited extent. "They exchanged cultural heritage and knowledge, but rarely spouses," commented anthropologist Joachim Burger, who lead the research. "Only after centuries did the number of partnerships increase."

Professor Joachim Burger, his Mainz paleogeneticist team, and international collaborators have pioneered paleogenetic research of the Neolithization process in Europe over the last seven years. They showed a lack of interbreeding between farmers and hunter-gatherers in prehistoric Europe in 2009 and 2013 (Bramanti et al. 2009; Bollongino et al. 2013). Now, they demonstrate that the cultural and genetic differences were the result of separate geographical origins. "The migrating farmers did not only bring a completely foreign culture, but looked different and spoke a different language," stated Christina Papageorgopoulou from Democritus University of Thrace, Greece., who initiated the study as a Humboldt Fellow in Mainz together with Joachim Burger.

The study used genomic analysis to clarify a long-standing debate about the origins of the first European farmers by showing that the ancestry of Central and Southwestern Europeans can be traced directly back to Greece and northwestern Anatolia. "There are still details to flesh out, and no doubt there will be surprises around the corner, but when

it comes to the big picture on how farming spread into Europe, this debate is over," said Mark Thomas of University College London (UCL), co-author on the study. "Thanks to ancient DNA, our understanding of the Neolithic revolution has fundamentally changed over the last seven years."

Sedentary life, farming, and animal husbandry were already present 10,000 years ago in the so-called Fertile Crescent, a region covering modern-day Turkey, Syria, Iran, and Iraq. Zuzana Hofmanová and Susanne Kreutzer, the lead authors of the study, concluded: "Whether the first farmers came ultimately from this area is not yet established, but certainly we have seen with our study that these people, together with their revolutionary Neolithic culture, colonized Europe through northern Aegean over a short period of time."

Another study has shown that the spread of farming, and farmers, was not the last major migration to Europe. Approximately 5,000 years ago people of the eastern Steppe reached Central Europe and mixed with the former hunter-gatherers and early farmers. The majority of current European populations arose as a mixture of these three groups.

**Please visit the site: <http://phys.org/news/2016-06-farming-europe-people-modern-day-greece.html#jCp>**

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# **SCIENTISTS DISCOVER AGE-OLD TRADING ROUTE FROM MESOPOTAMIA TO THE FAR NORTH ANALYSIS OF 3400-YEAR OLD GLASS FOUND IN GRAVES FROM ANCIENT EGYPT TO SCANDINAVIA SHOWS THEIR RAW MATERIAL CAME FROM BRONZE AGE MESOPOTAMIA, BY PHILIPPE BOHSTROM**

Spectacular green glass rods dug up in the ancient Egyptian city of Akhetaten and glass beads found in graves in Scandinavia, northern Germany and Romania, all originated in Mesopotamia, a new study has proven. The advanced analysis of the glass brings further proof to the existence of a vast trading system 3400 years ago, in which precious metals, amber and glass were exchanged.

The latest revelations, made by a team of scientists from Moesgaard Museum and the National Museum of Denmark, are the first archaeological evidence backing the "Amarna Letters", in which no less a dignitary than Pharaoh Akhenaten himself requests massive deliveries of glass from local rulers in nations around the Mediterranean.

They also reinforce recent studies proving the existence of a complex trading system of precious metals and stones from the far northern reaches of Scandinavia to Mesopotamia and Egypt during the Bronze Age.

The glass rods were originally found in the 19th century, in W.M. Flinders Petrie's excavations of Tell Amarna, the site of the new capital built by Pharaoh Akhenaten, who ruled from 1353-1336. The city was abandoned after his death.

In a new analysis, taking a tiny proportion of glass found at Amarna, the team tested 13 pieces of rods of different colors, blue glass chips and glass shards with multicolor decorations, using plasma-spectrometry. Their conclusion was that the green glass rods had been made in Mesopotamia.

Like metal ingots, the glass rods were raw material. In this case they were used for fine glasswork, for instance decorating glass vessels and stoneworks, and for inlays in gold jewelry and wooden objects, such as coffins and furniture.

Glass was as highly valued in the Late Bronze Age as the precious stones lapis lazuli or turquoise, obsidian and amethyst.

## **Diplomacy in Akkadian**

The Amarna Letters, a set of clay tablets in Akkadian, detailing diplomatic correspondence between ancient rulers in today's Syria and Egypt, show that Akhenaten

was seeking significant quantities of Mesopotamian glass, despite the existence of glass workshops in his city Akhetaten.

Evidently, even though Egyptian glass manufacturing was significant in scale, foreign supplies were needed.

Thilo Rehren, professor of archaeological materials and technology at University College of London, explains that in his opinion, not every workshop was capable of producing all colors.

“Most colors needed special knowledge or special materials,” Rehren tells Haaretz. “Access to and knowledge of these special minerals was limited, and may have driven specialization in the glass industry. Everybody was able to make simple copper blue glass - but the other colors are more specialist,” he says, and adds, “Why is Germany importing cars from Japan or France, when they have their own car-making industry?”

The exchange of glass between the main powers of the time gave them all access to the full spectrum of glass for their artistic studios, sparing them the need to maintain primary producing workshops with access to, not to mention knowledge of, all the exotic minerals needed for each color, Rehren argues.

### **A matter for the Pharaoh**

The analysis provides the first solid archaeological evidence of glass trading between Mesopotamia and Egypt, which had been known beforehand solely from the Amarna Letters.

The letters show that the demand for glass was important enough to warrant the pharaoh’s direct attention.

In fact, Egypt was apparently already importing glass from Syria a hundred years earlier, during the reign of Thutmose III (1479-1425 BCE), and he may have been personally involved too. The Annals of Thutmose III, which can be viewed on the walls of the Karnak Temple, display how the glass flowed into the hands of the Pharaoh. A depiction of Thutmose III donating tribute acquired from his Syrian wars to the Temple shows gold, silver and seven baskets with what seem to be precious stones to the Karnak temple – but three of these baskets mostly likely contain glass ingots.

“The glass depicted there does indeed most likely represent glass ingots. They are shown as circular pieces of fairly consistent size, whilst other pieces are shown as irregular lumps,” Dr. Daniela Rosenow from University College in London and project curator of the Department Ancient Egypt and Sudan at the British Museum, told Haaretz. “The apparent raw glass is described as ‘Menkheperre lapis lazuli’ ’to distinguish it from genuine lapis lazuli. Maybe the king was so impressed by this new material that he chose to add his throne name to it. While the deep blue glass is an imitation of lapis lazuli, the green glass shown as round cakes is referred to as Menkheperre turquoise/malachite.”

175 Egyptian disk-shaped glass ingots, almost all blue, shaped the same as the ingots depicted at Karnak, were also found in the Uluburun shipwreck off the southern Turkish coast, which also dates to the late 14th century BC.



### **Mycenae, trading hub of the ancients**

The team's chemical analysis of glass beads found in burials in Romania, Northern Germany and Denmark shows that they were also made from, or with, Mesopotamian glass, probably traded some time between 1400-1100 BCE. (Some were made of mixed Mesopotamian and Egyptian glass.)

Even though the origin of the raw glass used to make these beads can be determined as Egypt or Mesopotamia, determining where the glass beads unearthed in Europe were made is harder.

Secondary glass workshops would have reworked the raw glass, for instance mixing in Egyptian cobalt blue to create luxurious blue glass beads.

“Glass was a commonly traded object in the eastern Mediterranean world. It first appeared in Mesopotamia, but later it also was produced in Egypt. The glass was mostly traded as big 'round cheese' shaped ingots in that area. And probably, somewhere, glass workshops produced glass beads for trade in Europe. It could have been in the great trade ports such as Ugarit in Syria or most likely in Mycenae,” Dr. Jeanette Varberg, who is associated with the research and curator of Exhibits at Moesgaard Museum, told Haaretz.

### **Rehren is more cautious.**

“The mixing of glass in secondary workshops is an interesting possibility, but I would need to see clearer evidence for it. There are some observations and analyses that could be interpreted this way, but more data and clarity is needed before I can see this as a regular pattern,” Rehen says. “Mixing colored glass is a tricky business, since the colors bleed into each other and don't mix well. Glass mixing (and recycling) therefore is in my view really only starting with the emergence of colorless glass in the Hellenistic and Roman period,” he tells Haaretz.

In the East, raw glass seem to have moved along established trade routes via ports like Ugarit, reaching central places such as Mycenae

“Mycenae was the trade link to the rest of Europe. Amber beads probably went through there and the Mycenaeans were aware of the gold mines in Transylvania, copper mines in the Alps and the tin in South England, and most likely traded with them,” said Varberg.

From the Mycenaean central places, the trade routes were many. Also, glass beads are small. For the Mesopotamian glass to reach remote Alpine areas from the coast, all it took was one or two travelers slogging across the peaks with a thousand beads in a bag.

In Western Romania, beads made with Mesopotamian glassine elements were found in several burials and hoards. The most prominent is the Cioclovina Cave, which had 7500 artifacts of which 2325 were glass beads, 570 faience beads and 1770 amber beads. In Neustrelitz, North Germany a ceramic vessel containing 880 objects was found, with 20 amber beads and 179 glass beads.

Recent analysis of Danish glass beads has demonstrated that Mesopotamian glass is represented in 10 Danish burials. The most recent analysis of the chemistry of a blue glass bead from Puggegaard, Bornholm, has yielded yet another Mesopotamian result. The glass bead was found close to an amber bead in the burial of a woman, from 1400-1100 BCE. The grave also contained a bronze tutulus and bronze tubes for decorating a corded skirt.

Northern Germany was part of the amber trading network, Varberg says, and Romania had rich gold mines in the very same mountains where Cioclovina Cave lies.

Mesopotamian glass also reached the western parts of the Mediterranean in the 14th and 13th century BCE.: 25 glass beads were found at a rich burial at Campu Stefanu, Corsica, France. From Corsica, it is possible to follow the north-south routes of exchange through the Central Alps.

Following the north-south river systems of Europe and watersheds, there are a number of possibilities for connecting the Romanian find spots with Neustrelitz, not far away from the Baltic Sea, Bornholm Island, and the rest of Denmark.

The glass from the Neustrelitz hoard shows some of the same characteristics as the Romanian and the Danish material. It is thereby possible to follow the routes, almost step-by-step, from Mesopotamia to Denmark.

”It is impressive to be able to trace the flow of this glass across the whole of Europe, at such an early date. Numerous intermediate stops will have been needed for these beads to reach thus far - no need to focus only on the Mycenaeans as intermediaries, although they are of course the prime suspects,” Prof Rehren says and concludes, ”Similarly, and possibly in return, we see a lot of Baltic amber reaching the eastern Mediterranean - another precious stone that travels light and far.”

Please visit the site: <http://www.haaretz.com/jewish/archaeology/1.722765>

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## **PETRA, JORDAN, HUGE MONUMENT FOUND 'HIDING IN PLAIN SIGHT'**

A huge monument has been discovered buried under the sands at the Petra World Heritage site in southern Jordan.

Archaeologists used satellite images, drone photography and ground surveys to locate the find, according to the study published in the American Schools of Oriental Research.

The large platform is about as long as an Olympic swimming pool and twice as wide.

Researchers say it is unlike any other structure at the ancient site.

The study, by Sarah Parcak of the University of Alabama, Birmingham, and Christopher Tuttle, executive director of the Council of American Overseas Research Centers, describes the find as "hiding in plain sight".

Petra dates back to the fourth century BC, when it was founded by the Nabataean civilization, who inhabited parts of what is now Jordan, Iraq, Syria and Lebanon.

Surface pottery suggests the platform was built in the mid-second century BC, when Petra was at its peak.

It is thought the structure may have had a ceremonial purpose.

The survey also revealed a smaller platform was contained inside the larger one, which was once lined with columns on one side with a vast staircase on the other.

Mr Tuttle told National Geographic that someone in decades of excavation "had to know" the structure was there yet it had not been written up.

"I've worked in Petra for 20 years, and I knew that something was there, but it's certainly legitimate to call this a discovery."

Hundreds of thousands of tourists visit Petra each year, although numbers have been hit by the conflict against so-called Islamic State.

The site is best-known for the Treasury Building, which is carved from sandstone and featured in Indiana Jones and the Last Crusade.

**Please visit the site: <http://www.bbc.com/news/world-middle-east-36498234> [Go there for pix]**

## **THESE ANCIENT HEADLESS CORPSES WERE DEFLESHED GRIFFON VULTURES, BY KRISTINA KILLGROVE**

At the Neolithic site of Çatalhöyük in ancient Anatolia (modern Turkey), archaeologists have long wondered about the presence of griffon vulture symbols throughout the settlement and about a series of headless skeletons buried under house floors. A newly published study seeks to connect these two phenomena in a process called "vulture excarnation" - defleshing of corpses by vulture prior to burial.

Çatalhöyük is well known to archaeologists around the world. One of the world's earliest cities, it arose around 7500 BC, 300km south of modern-day Ankara, Turkey. The site is a cluster of densely-packed mudbrick houses, with as many as 10,000 people living there at its height. Individual houses shared walls, to such an extent that there were no doors or windows for people to enter - they had to go in through holes in the roof, making the tops of the buildings essentially streets. Walls, floors, and ceilings were all coated with plaster, and many were decorated with paintings and relief sculpture.

Burials at Çatalhöyük were made intramurally - that is, underneath the floors, usually in the central room of the family's house. Skeletons of men, women, and children are found on their sides in a tightly flexed, fetal-like position, which suggests the bodies were wrapped or bound before burial. This is normal for Neolithic burials in ancient Anatolia, but at Çatalhöyük, archaeologists found 14 headless bodies. Only one of them had cutmarks suggesting the body was probably defleshed by humans - the rest were a mystery. Researchers have long considered the possibility, though, that vultures, which figure prominently into the murals and sculptures at the site, were involved in defleshing the body prior to burial.

In an attempt to resolve this question, a team of archaeologists including Marin Pilloud (University of Nevada, Reno), Scott Haddow (Université de Bordeaux), Christopher Knüsel (Université de Bordeaux), and Clark Larsen (The Ohio State University) scoured the forensic literature for information on the effect of vultures on dead bodies and delved into the iconography of vultures in the murals at Çatalhöyük. They have reported their findings in the Journal of Archaeological Science: Reports.

**Please visit the site:**

**<http://www.forbes.com/sites/kristinakillgrove/2016/06/09/griffon-vultures-defleshed-corpse-to-create-headless-burials-in-ancient-anatolia/#78090e062705>**

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## **PURPOSE OF THE ANTIKYTHERA MECHANISM**

Scientists decipher purpose of mysterious astronomy tool made by ancient Greeks  
Inscriptions on Antikythera Mechanism suggests it was mechanical computer used to track sun, moon

When you're trying to fathom a mangled relic of very old hi-tech, it helps to have the manufacturer's instructions.

For over a century since its discovery in an ancient shipwreck, the exact function of the Antikythera Mechanism - named after the southern Greek island off which it was found - was a tantalizing puzzle.

From a few words deciphered on the twisted, corroded fragments of bronze gears and plates, experts guessed it was an astronomical instrument. But much more remained hidden out of sight.

After more than a decade's efforts using cutting-edge scanning equipment, an international team of scientists has now read about 3,500 characters of explanatory text - a quarter of the original - in the innards of the 2,100-year-old remains.

They say it was a kind of philosopher's guide to the galaxy, and perhaps the world's oldest mechanical computer.

"Now we have texts that you can actually read as ancient Greek, what we had before was like something on the radio with a lot of static," said team member Alexander Jones, a professor of the history of ancient science at New York University.

"It's a lot of detail for us because it comes from a period from which we know very little about Greek astronomy and essentially nothing about the technology, except what we gather from here," he said. "So these very small texts are a very big thing for us."

### **Eclipse predictions**

The team says the mechanism was a calendar of the sun and the moon that showed the phases of the moon, the position of the sun and the moon in the zodiac, the position of the planets, and predicted eclipses. Nothing of the sort was known to be made for well over 1,000 years.

"It was not a research tool, something that an astronomer would use to do computations, or even an astrologer to do prognostications, but something that you would use to teach about the cosmos and our place in the cosmos," Jones said. "It's like a textbook of astronomy as it was understood then, which connected the movements of the sky and the planets with the lives of the ancient Greeks and their environment."

"I would see it as more something that might be a philosopher's instructional device."

The letters - some just 1.2 millimeters (1/20 of an inch) tall - were engraved on the inside covers and visible front and back sections of the mechanism, which originally had the rough dimensions of an office box-file, was encased in wood and operated with a hand-crank.

It wasn't quite a manual, more like a long label you would get on a museum to describe a display, according to another team member, Mike Edmunds, who is an emeritus professor of astrophysics at Cardiff University.

"It's not telling you how to use it, it says 'what you see is such and such,' rather than 'turn this knob and it shows you something,'" he said Thursday, during a presentation of the team's findings in Athens.

### **Found in shipwreck**

The mechanism's fragments were raised in 1901 from a mid-1st century B.C. shipwreck, and at first seemed like a scruffy footnote to a magnificent body of finds that included bronze and marble statues, luxury glassware and ceramics.

But the sediment-encrusted, compacted lumps soon attracted scientific attention, and were studied by successive teams over the next decades. While hypotheses were made as to the functioning of the gears and the use of the machine, it was for long impossible to read more than a few hundred characters of the texts buried on the inside of a multi-layered mechanism a bit like a big clock.

About 12 years ago, Jones' and Edmunds' team started to use x-ray scanning and imaging technology to analyze the 82 surviving fragments.

"The original investigation was intended to see how the mechanism works, and that was very successful," Edmunds said. "What we hadn't realized was that the modern techniques that were being used would allow us to read the texts much better both on the outside of the mechanism and on the inside than was done before."

It was a painstaking process, as to read each of the tiny letters, researchers had to look at dozens of scans.

### **Not a toy**

Edmunds said the style of the text - formal and detailed - implied that it was designed to be much more than a rich collector's plaything.

"It takes it to me out of the realm of executive toys - an executive wouldn't pay all that money to have all that waffle - it's more serious than a toy," he said.

It was probably made in Greece between 200 and 70 B.C., although no maker's signature has been found.

The team says they have read practically all the text on the surviving fragments. Their greatest hope is that archaeologists currently revisiting the shipwreck will uncover pieces

overlooked by the sponge divers who found it a century ago - or even another similar mechanism.

The commercial vessel was a giant of the ancient world - at least 40 meters (130 feet) long - and broke into two as it sank, settling on a steep underwater slope about 50 meters (164 feet) deep.

Most of the inscriptions, and at least 20 gears that worked to display the planets, are still there.

"Perhaps, at some point, our reading may be fleshed out by sections retrieved from the sea," said team member Yanis Bitsakis.

**Please visit the site: <http://www.cbc.ca/news/technology/antikythera-mechanism-1.3628648>**

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## **TIMBERS FROM THE ANCIENT EGYPTIAN PHARAOH KHUFU’S SECOND SOLAR BOAT HAVE BEEN DISCOVERED ON THE GIZA PLATEAU, BY NEVINE EL-AREF**

During restoration work carried out in the pit of the Pharaoh Khufu’s second solar boat on the Giza Plateau, restorers have stumbled upon what are believed to be the floors of the shrine of the captain’s boat, supervisors said this week.

“This is a great step forward in the conservation of Khufu’s second boat,” said Eissa Zidan, supervisor of the restoration work, adding that 700 timbers had been removed from the boat pit located beside the Great Pyramid of Khufu at Giza.

Beams from the captain’s shrine are the latest items to be removed and others are still inside the pit.

The beams were in poor condition and the team had carried out preliminary restoration work in situ before transporting them to the Grand Egyptian Museum where they would be comprehensively restored before being exhibited, Zidan said.

Khufu’s boats had two shrines, he said, one for the pharaoh located at the end of the boats and the other for the captain at the front. The team had confirmed that the timbers belonged to the boat captain’s shrine after comparing them with those from the first solar boat, now on display at Khufu’s Solar Boat Museum on the Giza Plateau, he said.

It had solicited the help of experts in boat construction in order to determine the purpose of every piece of the boat. The shrine was also documented and photographed with a 3D laser scanner, Zidan said.

Restorers had removed the beams from the pit piece by piece and covered them in situ with a special chemical solution in order to protect them from the atmosphere outside the pit. In the laboratory, they had first reduced the humidity of the beams until it had reached 55 per cent and then subjected them to treatment and consolidation.

3D documentation of every piece of the boat was also carried out in order to document all the pieces, eventually helping in the reconstruction of the boat. Work is continuing in order to remove all the beams from the pit, restore the boat and reconstruct it to be put on display beside its sister.

The boat was discovered along with the first one inside two pits neighbouring each other in 1954 when Egyptian archaeologists Kamal Al-Mallakh and Zaki Nour were carrying out routine cleaning on the southern side of the Great Pyramid.

The first pit was found under a roof of 41 limestone slabs, each weighing almost 20 tons, with the three westernmost slabs being much smaller than the others and leading them to be interpreted as keystones.



On removing one of the slabs, Al-Mallakh and Nour saw a cedar boat, completely dismantled but arranged in the semblance of its finished form, inside the pit. Also inside were layers of mats, ropes, instruments made of flint, and some small pieces of white plaster, along with 12 oars, 58 poles, three cylindrical columns and five doors.

The boat was removed piece by piece under the supervision of restorer Ahmed Youssef, who spent more than 20 years restoring and reassembling the boat. The task resembled the fitting together of a giant jigsaw puzzle, and the completed boat is now on display at Khufu's Solar Boat Museum on the Giza Plateau.

In the neighbouring pit, the second boat remained sealed up until 1987 when it was examined by the American National Geographic Society in association with the then Egyptian Office for Historical Monuments.

A hole was bored into the limestone beams covering the boat, into which a micro-camera and measuring equipment were inserted. The void space over the boat was photographed and air measurements made, after which the pit was resealed.

In 2009, a Japanese team from Waseda University headed by Sakuji Yoshimura offered to remove the boat from the pit, restore and reassemble it, and put it on show to the public. The team cleaned the pit of insects and inserted a camera through a hole in the chamber's limestone ceiling in order to examine the boat's condition and determine appropriate methods to restore it.

A large hanger was constructed over the area surrounding the second boat pit, with a smaller hanger inside to cover the top of the boat itself.

The hangers were designed to protect the wooden remains during analysis and treatment. A temporary magazine and laboratory were established inside the hanger to use during the restoration process.

State-of-the-art equipment such as a device to adjust the temperature and humidity vital to the preservation of the wooden boat's remains was installed. Laser scanning also documented the area and the wall between the Great Pyramid and the boat pit. A solar electricity system was installed at the site to save energy during chemical treatments.

“In 2011, the Japanese-Egyptian team lifted aside the first stone block, weighing 16 tons, to start uncovering Khufu's second boat and begin concrete restoration work,” Yoshimura told Al-Ahram Weekly at the time.

Zidan said the beams, timbers, ropes and oars of the boat were buried in sand on 13 levels that housed approximately 1,200 pieces of the boat. 700 pieces had now been removed from the pit, he said.

**Please visit the site: <http://weekly.ahram.org.eg/News/16540/47/Boat-timbers-discovered.aspx>**

## **IRANIAN ARCHAEOLOGISTS UNCOVER PALEOLITHIC STONE TOOLS ON QESHM ISLAND**

A team of Iranian archaeologists have unearthed stone tools manufactured in the Middle Paleolithic era on the Persian Gulf island of Qeshm, Iran's Research Institute for Cultural Heritage and Tourism (RICHT) announced.

Morteza Rahmati, the director of the Iranian archaeological team, said the oldest findings unearthed are stone tools which belong to the Middle Paleolithic era and date back to more than 40,000 years ago, the official website of RICHT reported recently.

He added, “During the recent excavations near villages of Tabl and Salkh, a large number of stone tools were found.”

The site, which is called Bam-e Qeshm, is a large open-air site located on the Qeshm Island's Global Geopark. It was first discovered by Abdolreza Dashtizadeh in 2005, who registered it in the National Register of Historic Places (NRHP) of Iran in 2011.

Rahmati further said the site had been inhabited by hunter-gatherers who used it as a place for making tools needed to hunt and butchering animals and for daily tasks.

During the field research, overseen by Research Institute for Cultural Heritage and Tourism, sediment samples were also collected for sedimentological and geomorphological analysis of the site, he went on to say.

The Paleolithic era is a prehistoric period of human history distinguished by the development of the most primitive stone tools discovered, and covers roughly 95% of human technological prehistory. It extends from the earliest known use of stone tools, probably by Homo habilis initially, 2.6 million years ago, to the end of the Pleistocene around 10,000 BP.

**Please visit the site:**

**<http://www.tasnimnews.com/en/news/2016/06/14/1104478/iranian-archeologists-uncover-paleolithic-stone-tools-on-qeshm-island>**

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## **ARCHAEOLOGICAL DISCOVERY IN GEORGIA: WINE USED IN RITUAL CEREMONIES 5000 YEARS AGO**

In the archeological site of Aradeti Orgora, 100 kilometers to the west of the Georgian capital Tbilisi, Ca' Foscari's expedition led by Elena Rova (Ca' Foscari University of Venice) and Iulon Gagoshidze (Georgian National Museum Tbilisi) has discovered traces of wine inside an animal-shaped ceramic vessel (circa 3,000 BC), probably used for cultic activities.

The vessel has an animal-shaped body with three small feet and a pouring hole on the back. The head is missing. It was found, together with a second similar vessel and a Kura-Araxes jar, on the burnt floor of a large rectangular area with rounded corners, arguably a sort of shrine used for cultic activities. Results of radiometric (C14) analyses confirm that the finds date to circa 3000-2900 BC. Both zoomorphic vessels are a unicum in the region. The vessel, examined by palynologist Eliso Kvavadze, contains numerous well-preserved grains of pollen of *Vitis vinifera* (common grape vine), which shows wine's strategic role in the Kura-Araxes culture for ritual libations.

According to professor Rova, this is a significant discovery, «because the context of discovery suggests that wine was drawn from the jar and offered to the gods or commonly consumed by the participants to the ceremony». It's a key-finding for Georgia, where grapevine has been cultivated since the Neolithic period. Now the Georgian wine culture has been dated back to the Kura-Araxes period, more than 5,000 years ago and is still continuing: in the course of traditional Georgian banquets, the *supra*, wine is consumed from vessels derived from animal horns in the context of elaborated ritual toasts.

The Kura-Araxes culture (second half of the fourth and first half of the third millennium BC) is the only prehistoric culture of the Southern Caucasus which spread over large areas of the Near East, reaching Iran and the Syro- Palestinian region.

Started in 2013, in only three years Ca' Foscari archeological excavations have achieved this impressive result, thanks also to the support of the Italian Ministry of Foreign Affairs. 27 researchers and students from both countries and some local collaborators took part in 2015 campaign season, when the Kura-Araxes vessels were unearthed. The 2016 season will take place from June 17th until July 31st, which promises new and tantalizing discoveries.

Please visit the site: [http://www.unive.it/nqcontent.cfm?a\\_id=202370](http://www.unive.it/nqcontent.cfm?a_id=202370) [Go there for pix]

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## **ISRAELI RESEARCHERS TRYING TO FORCE A MAJOR RETHINK OF PREHISTORIC AGRICULTURE IN AREA - TWO ISRAELI SCHOLARS ARE CONVINCED THAT DOMESTICATION OF CROPS DIDN'T HAPPEN BY ACCIDENT, BY NIR HASSON**

Every archaeologist and historian knows that all the revolutions that humanity has experienced, including the invention of printing, the Industrial Revolution and the digital revolution, pale in comparison to the agricultural revolution. It was the domestication of food production that propelled human beings from subsisting as nomadic small groups of hunter-gatherers to the founders of permanent villages, cities, countries and empires. It was this revolution that created elites, technologies, tools, specializations and politics, essentially reshaping the face of the earth.

At the center of this revolution was the domestication of crops and animals and a shift from hunting animals and gathering plants to an agricultural economy. A new book by a pair of Israeli researchers, archaeologist Avi Gopher of Tel Aviv University and agronomist Shahal Abbo of the Hebrew University of Jerusalem, challenges the scientific consensus over the domestication of wild plants. Contrary to prevailing views, they contend that the process of domestication was very rapid, well-planned and organized, and that it took place in a single location, with several plant species. "It was a process, not a traffic accident," Gopher adds wryly.

"Plant Domestication and the Origins of Agriculture in the Near East" (Hebrew, Resling) is a book of popular science, but it is based on many scientific publications and proposes a theory that is not accepted by researchers of the prehistoric period. Abbo acknowledges that his and Gopher's views are held by fewer than 10 percent of researchers but notes that Israeli Nobel Prize-winning chemist Dan Shechtman also held what were considered dissenting views earlier in his career.

The accepted theory regarding the domestication of plants is that it came about almost naturally and by chance, when wild plants thrived near areas of habitation, particularly in piles of waste rich in organic substances. Those same people, the theory goes, noticed the plants growing in the garbage and began to cultivate them for their own use. The process of domestication, the majority of scientists believe, was very long, occurring over thousands of years of trial and error until the plants assumed the genetic characteristics that suited humans and became domesticated.

Gopher and Abbo say this theory has holes that scientists ignore, such as the fact that the first food crops to be domesticated - wheat, barley, chickpeas and lentils - don't thrive in waste piles. The accepted theory is that wild plants were collected and grown over a long period until they assumed the characteristics that suited human use. Gopher and Abbo say that while that may have been the case for cereals, when it comes to legumes, such as lentils, the process is much more complex. Only 10 percent of wild lentil seeds sprout

each year, Gopher notes, meaning that if you planted and cultivated the seeds, at the end of the season you would end up with virtually nothing.

This required that human beings select those seeds that had mutated and had a higher rate of sprouting. "To suggest that over years, human beings planted and harvested without receiving any benefit so that in the future they would be successful in domestication is not a rational thought," he adds.

Gopher and Abbo's comments may sound rather radical to most of those working in the field, but the pair are convinced that the agricultural revolution was a rapid process of a few decades or centuries.

### **Rational step**

During that time, Gopher and Abbo say, groups of people in the Neolithic period, about 10,500 years ago, in what is today southern Turkey or northern Syria, managed to domesticate six species of plants (two kinds of wheat, as well as barley, lentils, chickpeas and flax) almost at one time, and shifting from a hunter-gatherer economy to an agricultural one.

The researchers came to the conclusion that the people behind this process were skilled and carried out the process in a rational and planned manner that didn't leave a lot to chance. They had to identify plants growing naturally with the characteristics that they needed, for example, lentils most of the seeds of which sprout every year, or ears of grain that don't disintegrate, and then they had to grow them. The prehistoric people also had to find the strains that provided the best nutrition and combine them with fish and legumes.

"We're talking about people who lived in the field, whose knowledge of animals and plants was simply amazing," says Gopher. He and Abbo claim the revolutionary process had to take place in southeast Turkey or northern Syria because it was only in this region that the precursors of the plants that were domesticated existed. The most problematic case is wild chickpeas, which grew in a rather limited area. And with the exception of barley, the lineage of all of the plants can be traced to southeast Turkey.

The two researchers actually go one step further in challenging accepted wisdom. Most scientists believe the agricultural revolution, permanent habitation and changes in human lifestyles brought about changes in beliefs, such as the establishment of developed ritual, political structures and the like, but Gopher and Abbo claim it was the reverse, that the change in outlook preceded economic change and actually brought it about. Finds discovered over recent decades support this thesis. Among them was the discovery of a huge ritual site, Gobekli Tepe, in southern Turkey. To the amazement of scientists, it has been dated to before the agricultural revolution. It therefore had to have been built by hunter-gatherers.

Please visit the site: <http://www.haaretz.com/jewish/archaeology/premium-1.725932>

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## **ARCHAEOLOGIST IDENTIFIES LONG-LOST GRAVE OF ATTALID RULERS, IN TURKEY MONUMENTAL BURIAL SITE HAD BEEN KNOWN FOR 200 YEARS BUT NEW EVIDENCE INDICATES IT HOUSED BODIES OF KINGLY IMPORTANCE, BY PHILIPPE BOHSTROM**

The long-lost burial site of the Attalid Dynasty, which ruled the city of Pergamon after Alexander the Great, may have been identified. A vast mound first excavated almost 200 years ago in western Turkey is the spot, Prof. Felix Pirson thinks – and hopes to prove it soon using advanced technologies.

Certainly, the monumental burial site at Yiğma Tepe, atop a hill by Pergamon (today Bergama) had to have been created to commemorate somebody vastly important.

"What points to the Attalids is the monumental size and indications for dating in the 2nd century BCE," Pirson, director of the Pergamon excavation projects, told Haaretz.

Beyond its sheer dimensions, the architecture and the alignment of the tomb, to the western side of the Temple of Athena and stairway side of the Great Altar, also support the theory that it was the tomb of a great Attalid ruler, Pirson says.

### **Royal palaces, but where are the kings?**

The Hellenistic kings of Pergamon ruled over most of minor Asia during 2nd century BCE. The gorgeous Attalid royal capital, deliberately built with extravagant aesthetics to awe, was the embodiment of the kingdom's wealth and power.

Pergamon began as a fortress atop an isolated hill between two rivers. Pliny the Elder even credits the city with inventing the use of leather as parchment, after jealous Ptolemaic rulers banned the export of papyrus to Pergamon because they feared the royal library, built by King Eumenes II (who ruled between 197-159 BCE), was about to surpass their own in Alexandria. The city lasted into the Byzantine era: on the north slope of the hill, archaeologists have found spearheads, coins and ceramics from that time.

Spearheads, a ring and other artifacts from the Byzantine age, found at Pergamon. DAI Pergamongrabung Though Pergamon evolved into a capital of the Attalid kingdom, crowned with temples and sanctuaries, royal palaces and the Great Altar, the burial place of the Attalid kings remained unknown.

All along, however, the burial mounds at the foot of the mountain were a strong possibility.

The excavators found that the mound was contained by a peripheral wall (krepis) built of big andesite blocks, but no entrance way to the interior was found in this platform from

where the superstructure once rose. Despite intensive digging, which left behind the deep groove in the mound, they never found the burial chamber.

First generation of excavators at Pergamon leaning against the dig barrack - 1879. DAI-Pergamongrabung Pirson is hopeful that this season's investigation, with geophysical and seismic prospection, will bring new information about the inner structure and the building process of this monumental tumulus.

Another magnificent burial that has been excavated sits on the saddle of the İlyas Tepe (St. Elias Hill), to the east of the acropolis mountain. It belonged to an unknown man of grand stature. A tunnel built of ashlar blocks lead to a 2,200-year-old barrel-vault chamber, sealed off by a double-winged stone door that was equipped with a complex locking mechanism of bronze. Neither the massive stone doors nor the locking device was enough to stop grave robbers from stripping the tomb of its treasures.

The looters did leave left behind the skeletal remains of a man, aged 60-75, inside a sarcophagus. Thanks to an unguentarium found in the sarcophagus, a bottle frequently found in Hellenistic and Roman sites, the man's funerary monument could be dated to the second half of the 3rd century BCE, to the reign of Attalos (241-197 BCE).

The archaeologists believe the deceased was part of the Attalos family's most inner circle, perhaps a general.

Dörpfeld had also found two other burial mounds on the Kaikos plain, from an earlier era. These two burials, which had been left undisturbed by thieves, are also of the tumulus type, about 30 meters in diameter and date to the mid-3rd century BCE, the era of Eumenes I (who ruled from 263-241 BCE). Each contained a single sarcophagus, and one contained particularly rich "grave goods" - including a golden oak-leaf wreath with Herakles knot (that rested on the deceased's head), a Nike pendant, two heads of Molosser dogs made of gold, iron weapons, and a coin bearing the image of Alexander the Great. Next to it was another coin, "Charon's obol" – a coin that was placed with the dead as a fare for the journey to the underworld.

### **Giants battle the gods**

Despite the loss of many of its treasures, the archeological site of Pergamon is one of the finest remaining from the ancient Greek world. Among the most renowned: the Pergamon altar, which is on display at the Pergamon museum in Berlin. Eumenes II built the original to mark his victory over the Gauls. Originally standing on a terrace overlooking the city, it was decorated with a sculptural frieze illustrating the Gigantomachy, a mythic battle of gods and giants.

The biggest revelation of the recent excavations at Pergamon is how the royal capital developed and expanded across the plain from Hellenistic into Byzantine times, and how the Attalids utilized aesthetics in architecture to manifest their sovereign power.

“The Attalid rulers, who were famous for their cultural politics at their capital and beyond, recognized the power of aesthetics and messages conveyed by art and architecture to impress both their subjects, strangers and even their enemies,” Pirson told Haaretz.

### **'The world as a stage'**

To his mind, Pirson explains, the urban layout of Hellenistic Pergamon, i.e. the position of building-terraces and the structure of the street-system, reflects not only practical necessities but aesthetic criteria – and consideration of the surrounding topography to maximize the impression of magnificence.

Even the street system and roads seem to have contributed to the overall aesthetic, being laid out to highlight the spectacular topography of the city-hill by dynamic axes, which were linked in turn to important buildings. This isn't just theory: the ancient Greeks even had a word for this new spatio-visual technology, *skēnographia* – a word originating in Greek theater, where the world became the stage.

In short, the Attalids knew how visual media could be used as agents of domination, seduction, persuasion and deception, and configured the Pergamene urban space to manifest their power.

In effect, they transformed the city into a stage, where the politicians were the actors, and the people were the spectators.

The kings of Pergamon – who were interchangeably named either Attalos or Eumenes – did not settle for beautifying their own cities. They were also great artistic patrons of the ancient world and showed particular benevolence toward Athens, where the ancient marketplace was beautified by a magnificent reconstruction of Attalos' Stoa (today housing the finds of the American archaeological school).

### **Where Satan lives**

Not everybody felt awe of the architectural Attalids. Apostle John referred to Pergamon as the city “where Satan is dwelling”. As the meeting place of religious traditions from Anatolia, Greece and the Orient, the place was crawling with cults.

Excavations on the northern side of the hill found rock sanctuaries dedicated to the cults of Meter-Cybele and Dionysus. Even the steepest slopes housed small terraces with sanctuaries.

We know that cult and religion were part of the overall architectural aesthetic, and were an element in city planning because of the existence of a “street-sanctuary” discovered a main street of the city.

Next to a prominent rock formation, a niche, an altar and a tree was situated, enabling the devout to rest in the shade while praying. Until now, such “street-sanctuaries” had only been known from reliefs of the late Hellenistic period.

Written sources speak of Pergamon's religious diversity. It is the place where the Chaldean Magi (astrologers) are said to have fled from Babylon . Sick people from all over Asia flocked to Pergamon because of its temple to Asclepius, the god of healing and medicine.

"Religious intolerance in the modern sense did not exist in antiquity," Pirson explains. "As long as the dominant political order and the associated religious system were accepted, other cults and beliefs could be practiced as well. This was a fertile soil for a multi-religious life in the Roman Imperial Age. But it did not spare Pergamon from violent persecutions of Christians in the 2nd and 3rd centuries AD," he said. And, eventually, the millennia-long history of this magnificent city came to an end.



Please visit the site: <http://www.haaretz.com/jewish/archaeology/1.725089> [Go there for many pix and drawings]

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## **GREAT PYRAMID OF GIZA IS SLIGHTLY LOPSIDED, BY OWEN JARUS**

The Great Pyramid of Giza may be a Wonder of the Ancient World, but it's not perfect: Its base is a little lopsided because its builders made a teensy mistake when constructing it, new research reveals.

The west side of the pyramid is slightly longer than the east side, scientists have found. Although the difference is very slight, it's enough that a modern-day research team, led by engineer Glen Dash and Egyptologist Mark Lehner, was able to detect the small flaw in a new measuring project.

"The base is not quite square," Dash said. The project is being carried out by the Glen Dash Research Foundation, led by Dash, and Ancient Egypt Research Associates (AERA), led by Lehner. AERA has been mapping and excavating the Giza plateau for about 30 years.

The Great Pyramid was built for the pharaoh Khufu about 4,500 years ago. Called a "wonder of the world" by ancient writers, it is the largest of the three pyramids located on the Giza Plateau.

When the Great Pyramid was first constructed, it was clad in a limestone casing, much of which is now gone. Much of the casing was reused for building projects in past centuries. Without the casing, scientists have had a tough time getting accurate measurements of the pyramid as it originally stood.

"What is the exact size and orientation of the Great Pyramid? Archaeologists, scientists, engineers and mystics have sought answers for centuries," Dash wrote in a report published in the most recent issue of the newsletter Aeragram, which chronicles the work of AERA.

"Most of those casing stones were removed centuries ago for building material, leaving the pyramid as we see it today, without most of its original shell," Dash wrote.

### **Measuring the Great Pyramid**

Researchers took measurements of the Great Pyramid's edges and platform, showing what one of the corners may have looked like when built. Researchers noticed a "corner socket," or a cutting in the rock, whose purpose remains unclear.

To determine the lengths of the original pyramid sides, Lehner led a search for surviving casing stones whose edges still touched the platform that the Great Pyramid was built on. They also searched for marks on the platform that would provide clues as to where the edges were. In total, they found 84 points along the pyramid's original edges. These points were marked on a grid system that AERA has been using to map all of the features on the Giza Plateau.

Then, the team used a statistical method called linear regression analysis to determine those lengths. They found that the east side of the pyramid originally measured

somewhere between 755.561 and 755.817 feet (230.295 to 230.373 meters), while the west side of the pyramid originally measured somewhere between 755.833 and 756.024 feet (230.378 to 230.436 m).

This means that, at most, the west side was only 5.55 inches (14.1 centimeters) longer than the east side. Though that would leave the pyramid not quite square, it's a remarkable level of precision for a monument constructed more than 4,500 years ago, the researchers noted.

"The data show that the Egyptians possessed quite remarkable skills for their time," Dash wrote in the report. "We can only speculate as to how the Egyptians could have laid out these lines with such precision using only the tools they had." [How Were the Egyptian Pyramids Built?]

Dash thinks the ancient Egyptians laid out the pyramid on a grid. The pyramid's north-south axis (or meridian) runs 3 minutes 54 seconds west of due north while its east-west axis runs 3 minutes 51 seconds north of due east, he told Live Science. The east-west axis also runs through the center of a temple built on the east side of the pyramid. These measurements mean that the Great Pyramid is oriented just slightly away from the cardinal directions, the degree of error from north-south and east-west being almost the same.

The fact that the degree of error is almost the same and that it is so small provides "good evidence that the pyramid and its associated temple were laid out on a common, very precisely oriented grid," Dash said.

The researchers will continue analyzing the data they gathered to find more information on the design and construction of the Great Pyramid.

"We hope to eventually figure out how the Egyptians laid out the pyramid with such precision and, in doing so, hope to learn much about the tools and technology they had at their disposal," Dash wrote.

Please visit the site: <http://www.livescience.com/55118-great-pyramid-giza-is-slightly-lopsided.html>

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## **CANAANITES SACRIFICED ANIMALS FROM EGYPT 5000 YEARS AGO, ARCHAEOLOGISTS FIND - ANALYSIS OF A SACRIFICIAL DONKEY FOUND IN THE FOUNDATIONS OF A HOUSE IN ANCIENT GATH, AND OF OTHER REMAINS, SHOW THEY WERE BORN AND BRED IN THE NILE, BY PHILIPPE BOHSTROM**

The ancient Canaanites living in Gath some 5,000 years ago weren't sacrificing their own livestock to appease the gods. They were importing animals from ancient Egypt, archaeologists have now proven.

A donkey, as well as some sheep and goats whose remains were found in Early Bronze Age layers at Gath dating to 4900 years ago turn out to have been born and bred in the Nile valley. The discovery at the archaeological site of Tell el-Safi shows that animals were part of the extensive trading relations between the Old Kingdom of Egypt and Early Bronze Age Canaan (circa 2900-2500 BCE).

"That there were trade connections between Egypt and Canaan in the Early Bronze Age is not new. The fact that animals were a part of the trade - and that they went from Egypt to Canaan - is very interesting," Aren Maeir, head of the excavations in Gath, told Haaretz.

Until now, trade in animals themselves had been known only from later periods (the Middle Bronze Age), and usually it went in the other direction - from Canaan to Egypt. This is the first concrete evidence of Canaanites importing Egyptian animals, let alone that early.

It bears adding that evidence of animal sacrifice, on the other hand, was anything but rare: vast amounts of sacrificial animal remains, also dating from 5,000 years ago, had been found at Megiddo.

### **Jawbone of a donkey**

In Gath, one of the sacrificial animals, a complete donkey, was found beneath the foundations of a building.

"It appears that the donkey was a 'foundation deposit' placed before the building of a residential house. Similar deposits and/or ritual sacrifices of donkeys are known from other Early Bronze sites in Israel, and from various Ancient Near Eastern sources (including the bible)," says Maeir.

(It bears adding that ancient Jews - who apparently did not exist 5,000 years ago as a distinct people, but came later - did not sacrifice asses, on the grounds that they were unclean animals prohibited for consumption anyway.)

The specific animal, after being killed, had its head was tied to the body, and was then it was placed in a pit.

The origin of the donkey was ascertained by isotopic analysis of its teeth, which enables comparison of trace elements in bones without destroying them. The results clearly showed that the sacrificial ass had not been born and raised locally at Gath, but was imported and lived in the Canaanite city only briefly before its death.

Four goats and a sheep also found in the Early Bronze age layer at Gath were analyzed and were shown to have also been born and bred in the Nile valley.

Why these animals were brought from Egypt to Gath is anybody's guess. "The why is not clear. We do know that the donkey was originally domesticated in North Africa a few centuries before, so perhaps Egypt was still a major source of donkeys in general," Maeir speculates, and adds, "We have evidence of objects of various origins (Egypt, various parts of Israel and the southern Levant). As the site is one of the largest in the region at the time, we assume that the city had an important role in trade between the various city states at the time - just as it did in later periods, during the Iron Age I-II, for example."

Also, he points out, donkeys played an important social and symbolic role in the Ancient Near East.

### **The real ships of the desert**

Donkeys were domesticated in North Africa sometime in the late 5th or early 4th millennium BCE. In the Early Bronze Age, donkeys were used to pull caravans in the land trade between Egypt and Israel, and in Mesopotamia too. (Camels first appeared in Middle East from Asia, and began to ply the desert trading routes, in the middle of the Iron Age, in around 900 BCE).

The importance the donkeys were ascribed in the Early Bronze Age economy of Gath is attested by several donkey burials and donkey related-objects that have been found.

"Donkeys were considered an important animal in the Ancient Near East. In fact, a donkey was a status symbol in many cases - very different from its image today," Maeir told Haaretz.

While donkeys are usually thought about in economic terms, they also had other important aspects - such as religious symbolic significance.

While it is true that Israelites as such (who developed as a people somewhat later) did not sacrifice asses on the grounds that they were unclean, in pre-Judaic times, asses were very much led to the altar (Exodus 13:13).

In fact, asses were hailed and sacrificed to the gods throughout the Near East. In Middle Bronze Age Mari texts, donkeys are sacrificed as part of the signing of treaties. In Late Bronze Age Ugarit, 70 asses were dispatched as part of the god Baal's funeral.

In Egypt, the ass is one of the symbols of the god Seth, the god of Chaos. In the Old Testament, the son of the founding father of the city Shechem is named hamor, which means donkey in Hebrew (Gen. 33:18-43:31). Moreover, a donkey is given the power to talk by god in the story of Balaam (Num. 22). The donkey has fallen a long way since being an object of veneration all those thousands of years ago.

Excavations at Gath will continue this summer, focusing on the lower city and the area of the gate discovered last year.

This collaboration by a team from Grand Valley State University, Michigan, the University of Connecticut, University of Manitoba, Ariel University and Bar-Ilan University was funded by a grant to Haskel Greenfield and Aren Maeir, by the Canadian Social Science and Humanities Research Council.

Please visit the site: <http://www.haaretz.com/jewish/archaeology/1.726027> [Go there for pix]

## **IRAQI KURDISTAN SITE REVEALS EVOLUTION OF THE FIRST CITIES OF MESOPOTAMIA**

A UNIVERSITAT AUTÒNOMA DE BARCELONA (UAB) campaign at the site of Gird Lashkir, in Iraq, reveals the evolution from the first farming societies to the consolidation of the first cities of Mesopotamia. A similar sequence of occupancies does not exist at any other site, and the UAB research team is the only Spanish team working there.

A presentation in Barcelona revealed the latest archaeological discoveries on the origins and consolidation of the first farming societies in Upper Mesopotamia, in Iraqi Kurdistan. The research is the result of a project conducted by an interdisciplinary team under the leadership of professors Anna Gómez Bach and Miquel Molist, from the UAB Department of Prehistory. The area had been closed off since the 1990s to archaeological research and the UAB is the only research team from Spain working at the site.

After many years working in Syria and Turkey, where all work was halted due to the military instability of the area, the research team coordinated by professor Miquel Molist continues to study the origins and consolidation of the first farming societies, in this case in the most eastern part of Upper Mesopotamia.

Iraqi Kurdistan is one of the most interesting regions of the Middle East, given that since the 1990s and until three years ago no archaeological research could be conducted there, making it a new geographic and historical site in which to conduct archaeological studies.

Currently there are several European and American teams focusing on research in the area, such as the UAB team, thanks to a collaboration agreement between the UAB and the Salahaddin University-Erbil. The first campaign was conducted in autumn 2015 and the second took place in May and the first week of June 2016.

The Gird Lashkir site is an archaeological tell with exceptional potential, with some 14 metres of sediments and a surface of approximately 4 hectares occupied by ancient populations. It is located close to the temporary river of Wadi Kasnazan and the cities of Kasnazan and Banaslawa, pertaining to the current capital of Kurdistan, Erbil (in northern Iraq).

The archaeological dig has revealed a series of occupancies which go from the Neolithic period to the first millennium BCE.

Over 150 m<sup>2</sup> have been uncovered, which distributed along the slopes of the tell, have allowed researchers to discover well conserved architectural remains of specialised buildings, personal houses and working areas located in exterior areas.

Researchers were able to differentiate between the more recent occupancies, located in the higher part of the tell and dating from the historic Neo-Assyrian period (until the end

of the second millennium BCE). Several discoveries from this era stand out, such as a censer, which could indicate that one of the buildings was used as a warehouse, and could be linked to the exchange of goods.

Another very extensive and important occupancy, probably from the Early and Middle Bronze Age (more specifically from Ninevite V, 2600-2550 BC) was confirmed, with habitat vestiges in several areas of the tell and the discovery of very important objects such as a complete jug, ceramics and farming tools. Worth highlighting is the discovery of a surprising set of clay figurines representing cattle, which could have been toys or have had more of a religious significance.

The most ancient period, discovered on site in this latest campaign, is an occupancy from the Uruk period (ca. 4000 to 3100 BCE), in one of the deepest digs conducted at some 4 metres below current ground level. Remains were also recovered from the Neolithic's Ubaid and Halaf periods (6000 to 4500 BCE).

The evaluation of the discoveries made at this site is very positive. First from a scientific viewpoint, given that there are no sites with an occupancy similar to the one in the area of Erbil and because it allows to discover the evolution of the settlement in the western plain of northern Kurdistan. The good conservation of the remains and the importance of the objects found confirm the potential of the settlement as a historical source of the first cities of Mesopotamia.

The UAB research team is the only one from Spain participating in the new archaeological research activities in Iraqi Kurdistan, and has established cooperation and heritage development relationships with local institutions (specifically with the Erbil Museum and the Directorate General of Antiquities).

After the dig campaign, researchers are beginning to work in the laboratory to conduct an in-depth study of all the material elements discovered and carry out archaeometric analyses with radiocarbon dating, as well as determine the raw materials of the objects.

Work at the site will continue in 2017 with the final restoration of the most significant objects which will be exposed at the Archaeological Museum of Erbil.

The Gird Lashkir project, initiated in 2015 by the team at the Prehistoric Middle Eastern Archaeology Seminar (Department of Prehistory of the Universitat Autònoma de Barcelona) with the collaboration of the Directorate General of Antiquities of Kurdistan and the Salahaddin University-Erbil, was also financed by the Directorate General for Fine Arts and Cultural Goods, and for Archives and Libraries of the Spanish Ministry for Education, Culture and Sports.

**Please visit the site: <http://www.uab.cat/web/newsroom/news-detail/x-1345668003610.html?noticiaid=1345706063964>**



## **NEW BATTLE IN ONE OF THE WORLD'S OLDEST CITIES, BY HABIB BATTAH**

In the 11th century before Christ, the ancient Egyptian traveler Wenamon describes standing in the office of the prince of Byblos, the waves of the Mediterranean Sea crashing outside the window behind him, as though they were "hitting the back" of the prince's head.

Wenamon had been sent by Egypt's King Ramses XI on a mission to retrieve cedar wood to repair a sacred vessel. The negotiations were tense, and the Egyptian envoy was eventually forced to send home for more money to buy the wood. The Pharaohs had long relied on Lebanon's then-plentiful forests for the building of their temples, furniture and ships. According to his account, Wenamon surveyed the logs of timber piled up on the Byblos shore ready for export, with 20 ships moored in its harbor.

Now, over 3,000 years later, contemporary Lebanese archaeologists have made new discoveries revealing the location of where exactly that harbor may be buried and the pivotal role of Byblos, one of the world's oldest cities, in the ancient maritime supply chain.

The research is being spearheaded by Martine Francis-Allouche, a marine archaeologist at College de France, who has undertaken a series of geophysical tests at Byblos over the last five years. Francis-Allouche's findings challenge the long-held assumption that the current port of Byblos, established in the medieval era but now lined with fishing boats, restaurants and tourist shops, was also home to the Phoenician-era port. Francis-Allouche builds on the surveys of the late British archaeologist Honor Frost, who ruled out the medieval port and surrounding coastal areas as the location for the Phoenician harbor after conducting sounding cores along the shores of Byblos in 2000.

But following renewed geophysical testing, Francis-Allouche now believes the harbor may in fact be buried further inland, just south of the Byblos ruins, where excavations have revealed the presence of Phoenician ship anchors and an ancient shoreline 100 meters above the current beachfront. Francis-Allouche is keen to resume her excavations on the site in the hope of finding artifacts and structures belonging to the once-bustling Phoenician port and its prominent timber trade, indicated by wall inscriptions found in Egyptian temples.

But there is just one catch. The land where Francis-Allouche wants to continue digging is prime beachfront real estate. A luxury resort and spa project is already under construction there.

Dubbed "Diplomatic Club," the \$12-million project is right next to the Byblos UNESCO World Heritage site and is on land owned by the Armenian church, which is renting the property out to the lead developer, a former Lebanese minister. The church inherited the property from a former orphanage on the site known as Bird's Nest, which cared for thousands of Armenian children rescued from genocide in Turkey. The proposed resort, which is to feature an array of private shorefront cabanas and pools, caused an uproar last year when activists leaked its plans to turn the Ottoman-era orphanage building, which

housed the oldest Armenian church in Byblos, into a restaurant or spa. More controversially, the developer had begun preparations to exhume the bodies buried in a small cemetery near the church belonging to the genocide survivors who helped build the orphanage. After going viral on social media, the story reached the Armenian press in the United States, and shortly afterwards, the Armenian high priest Catholicos Aram I of the Holy See of Cilicia put the project on hold.

Yet there was little talk of the rampant resort development along the Byblos shores earlier this month at a Lebanese American University conference, "Byblos: History, Culture and Modernity," where Francis-Allouche presented her findings. Speakers from across the Mediterranean talked about protecting historical districts and encouraging community involvement in their towns and cities. But when it came to modern Byblos, where a Lebanese American University campus is located, the Lebanese academics spoke strictly of archaeology and antiquity. The only mention of the current city came from Byblos mayor Ziad Hawat, who gave a keynote speech opening the event, praising the city council's preservation of its ancient past and vision for a "green" future, including promises to build a new museum, solar energy and public transportation. "Byblos doesn't just belong to the people of Byblos, it belongs to the entire universe," Hawat said, adding: "Byblos is a model for other Lebanese cities."

Indeed like much of Lebanon's coast, the city's shores are teeming with elite private resorts, many of them constructed without permits and blocking public access. A 2012 survey by the ministry of public works and transport found over 1,000 violations along the country's 220-kilometer coastline, or an average of five violating establishments per kilometer, many of them owned by politicians. But Hawat, who himself is developing a controversial 25,000-square-meter mall in the hills above the old city, did not stay for questions from the panelists or the handful of students that attended. (He thanked the university profusely, calling it "a partner" in all municipal activities and its dedication to the community.)

When asked if the university was involved in local governance around coastal development and legal violations, the university's dean of architecture and design, Elie Haddad, said this work would be better suited to an investigative journalist. One professor chimed in, adding: "The role of the university is not to follow up on what the municipality is doing." Yet in Beirut, a number of professors have been intimately involved in the campaigns to stop unregulated coastal developments by providing activists with legal or cadastral research and strategies for alternative planning. Several professors, architects and urbanists ran in the capital's recent municipal elections on a platform of reclaiming the city, its green spaces and nearly completely privatized coastline, from well-connected developers.

However, real estate and archeological preservation need not always be at odds, Francis-Allouche explained when answering a question about the impact of the "Diplomatic Club." She said the ruins could be integrated into the resort, noting that the developer had agreed to allow the excavation works to continue. "Everything can go together, hand in hand," she said.

A spokesperson for the Diplomatic Club said the developer was also keen on continuing the excavation and would make any ruins found on site accessible to the public. "Of course it won't be closed to the public, it will be open to all the Lebanese people," the

source said on the condition of anonymity. "If something is found, we won't move it or destroy it, it will be kept on site. It's important for us to show how we can mix modernity with antiquity." But the spokesperson said it was too early to say how exactly the public would access the ruins within the exclusive resort and whether or not there would be a public garden or viewing area. The source added that unlike other resorts, the beach would not be fenced in for clients only and would remain open to the general public.

But other real-estate projects have turned out differently. Several sites of ruins along the Lebanese coast and cities have been cleared for private development. A 2014 Al Jazeera documentary on the topic covered one resort in south Lebanon where modern pool buildings were physically attached with concrete to ancient ruins. Francis-Allouche herself has lost a battle to preserve what she believes was an ancient Phoenician dry dock at a Beirut excavation, which was destroyed without warning two years ago following a decision by the culture minister then to build a luxury apartment tower.

With the unregulated real-estate boom in Lebanon, local archaeologists are hamstrung by budget constraints and property laws. Those laws say archaeological excavations should be funded by developers when discovered on their property. Theoretically, the developer can only proceed with construction once excavations have been completed and the approval has been given by the ministry of culture's Directorate of Antiquities. Yet the negotiations between the ministry and powerful developers over what ruins should stay, what can be destroyed and how much time researchers will have to do their work are not made public. In the rare case that the state decides to halt a developer's project, this also likely means the investor can stop funding the dig.

The Diplomatic Club spokesperson vows that the project will be different than other developers who "don't even declare ruins and sometimes destroy them by night." The man behind the project, Jean-Louis Qordahi, a former telecommunications minister as well as a former Byblos mayor, has already spent \$200,000 "from his own pocket" on the archaeological excavation, the spokesperson said. And because of the proximity to the Byblos site, UNESCO will also have a say in granting the resort approval, which is still pending, the spokesperson added.

As for the Armenian graves, the plan to exhume them is still going forward. The source said the remains will be moved to a mass memorial site as part of a new Armenian genocide museum further inland. But activists vow to continue their battle to preserve the graves of those who survived the atrocities and the church they built, as one of the first major settlements of the community in Lebanon. They say the site should be fully open to the public as one of the few remaining undeveloped plots on the coastline.

Over 3,000 years since Wenamon's account was written, some researchers now believe the story may be partly fictional, although its detailed descriptions appear to match recorded events. Whether or not his difficult journey and arduous negotiations with the prince were accurate, the shores of Byblos today remain just as fraught as its ancient, unyielding sea.

**Please visit the site: <http://www.al-fanarmedia.org/2016/06/new-battle-in-one-of-the-worlds-oldest-cities/>**

## **ARCHAEOLOGISTS DISCOVER SKELETONS, COINS IN ANCIENT POMPEII SHOP, BY FRANCES D'EMILIO**

Italian and French archaeologist team, digging in the outskirts of Pompeii, have discovered four skeletons and gold coins in the ruins of an ancient shop in Pompeii, near Naples, Italy.

The skeletons are those of young people, including an adolescent girl, who perished in the back of the shop near the ancient Roman town when Mount Vesuvius erupted and covered it in ash in AD 79, said a statement from the area office of the famous archaeological site near Naples.

Three gold coins and a necklace's pendant were scattered among the bones. In the workshop was an oven which archaeologists think might have been used to make bronze objects.

The excavation of that and a second ancient shop started in May near a necropolis in the Herculaneum port area. Archaeologists are puzzling over what kind of business the second shop did. It features a circular well accessible by a spiral staircase dug out of the terrain.

Officials said there was evidence the shop had been ransacked by clandestine diggers after the eruption, presumably "on the hunt for treasures buried under the ashes." The coins and the gold-leaf-foil pendant, in the shape of a flower, apparently escaped the eyes of those pillaging the shop, the archaeologists said.

In another stunning discovery, the dig revealed a 4th century B.C. tomb of an adult, complete with funerary vases. The find "adds to the rare funerary testimony of the pre-Roman age," a statement said.

Inside the tomb was the skeleton of an adult, possibly male, lying on his back. Near the arms and feet were at least six vases painted black.

Pompeii and nearby Herculaneum were ancient Roman towns. Much of the area is still to be excavated, including of Herculaneum, which was buried deeper, beneath as much as 24 metres of ash.

Please visit the site: <http://globalnews.ca/news/2785544/archaeologists-discover-skeletons-coins-in-ancient-pompeii-shop/>

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## **A GATEWAY TO PAN EXPOSED AT HIPPOS**

\*Monumental Roman Gate Discovered at Sussita National Park, Following Discovery of Unique Mask of the God Pan. Expedition head Dr. Michael Eisenberg of the University of Haifa: "Now that the whole gate has been exposed, we not only have better information for dating the mask, but also a clue to its function. Are we looking at a gate that led to the sacred compound of the god Pan?"\*

Has the gate to the compound of the god Pan been discovered at Hippos (Sussita)? A monumental Roman gate discovered in the excavations by the University of Haifa at Hippos may cast light on the bronze mask of Pan - the only object of its kind found anywhere in the world - that was discovered in the same site during last year's excavation season. "Now that the whole gate has been exposed, we not only have better information for dating the mask, but also a clue to its function. Are we looking at a gate that led to the sanctuary of the god Pan or one of the rustic gods?" wonders Dr. Michael Eisenberg, the head of the expedition.

Last year, researchers from the Zinman Institute of Archaeology at the University of Haifa made one of the most unique and unusual findings of recent years. They unearthed a bronze mask representing Pan, the god of shepherds. Half man and half goat, Pan also represents fields, music, and merriment. The discovery of bronze mask of this size depicting one of the gods was an innovation on the global level, a fact that seriously complicated efforts to date the item or explain its possible function. Dr. Eisenberg notes that until now it has only been possible to suggest hypotheses regarding the mask's original functioning and to use artistic and stylistic criteria to propose a possible date for its casting.

The mask was discovered in the remains of a large basalt ashlar building, and the researchers assumed that uncovering the building would provide additional information about the unique object. As happens almost every year, Hippos did not fail to yield some surprises. The researchers were working on the hypothesis that the building formed part of the fortifications of the city, but as they dug deeper they found two square basalt towers with dimensions of approximately 6.30 meters x 6.30 meters and a portal of 3.7 meters wide in-between. The researchers concluded that the original gateway was over six meters high, while the building (propylaeum) itself was even taller. The propylaeum can probably be dated to the period of the Emperor Hadrian, who reigned from 117 to 138 CE, or slightly earlier. The mask was presumably fixed to a wall or altar at the compound, as its rear side included remnants of lead used for stabilization purposes. Now, however, the researchers can offer a fuller analysis regarding not only the mask's dating, but also its function.

"When we found the mask on its own, we assumed that it had filled a ritual function. Since we found it outside the city, one of the hypotheses was that we were looking at evidence of a mysterious ritual center that existed outside the city. However, as we all know, monumental gate structures lead to large compounds. Accordingly, it is not impossible that this gate led to a large building complex - perhaps a sanctuary in honor of the god Pan or one of the other rustic gods - situated just before the entrance to the city of Hippos," Dr. Eisenberg suggests.

"The mask, and now the gate in which it was embedded, are continuing to fire our imaginations. The worship of Pan sometimes included ceremonies involving drinking, sacrifices, and ecstatic rituals including nudity and sex. This worship usually took place outside the city walls, in caves and other natural settings. We are very familiar with the city of Paneas to the north of Hippos, which was the site of one of the best-known sanctuaries for the worship of Pan. But here we find a monumental gate and evidence of an extensive compound, so that the mystery only gets stranger. What kind of worship of Pan or his fellow Dionysus, the god of wine, took place here in Hippos? To answer that question, we will have to keep on digging," concludes Dr. Eisenberg.

Since 2000, the ancient city of Hippos has gradually been unearthed by an international expedition under the auspices of the Institute of Archaeology at the University of Haifa. Hippos lies within Sussita National Park, which is managed by the Israel Nature and Parks Authority. The next excavation season will be held in July 2016, with the participation of dozens of researchers and volunteers from Israel and around the world.

Please visit the site: <http://newswise.com/articles/a-gateway-to-pan-exposed-at-hippos> [3D simulation of the gate: <https://www.sketchfab.com/models/37933eaf03084fab984408430e367905> Short video of the excavations: [https://www.dropbox.com/s/ghmqz66wppq0h7s/Hippos03\\_06\\_16\\_3.mp4](https://www.dropbox.com/s/ghmqz66wppq0h7s/Hippos03_06_16_3.mp4)]

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**THE 6,000-YEAR-OLD TELESCOPE -**  
**ASTRONOMERS SAY THEY HAVE**  
**DISCOVERED AN ANCIENT**  
**ASTRONOMICAL TOOL, POTENTIALLY**  
**USED BY PREHISTORIC HUMANS FOR**  
**STARGAZING RITUALS,**  
**BY ADRIENNE LAFRANCE**

Telescopes as we know them today trace their origins back to the Enlightenment. The earliest such devices emerged about 400 years ago. But humankind has fashioned environments for stargazing for far longer than that.

Scholars have long speculated about the astronomical orientation of the Pyramids at Giza, for instance, and the possibility that Stonehenge was built to be a celestial observatory.

Now, there's evidence of ancient telescopic structures that date back even farther, to about 6,000 years ago. Astronomers are exploring ancient tombs in Portugal that they believe may have been used by prehistoric humans to enhance specific views of the night skies. Researchers are focusing on the alignment of the stars with megalithic tombs-stone structures known as dolmens that feature long narrow entrances that act as apertures, essentially zooming in on stars and planets that wouldn't always be visible from the outside. "These structures could therefore have been the first astronomical tools to support the watching of the skies, millennia before telescopes were invented," the Royal Astronomical Society wrote in a statement announcing the research on Wednesday.

They also may have been used for ceremonious rites of passage, researchers say. "Similar suggestions have been made for the ritual use of caves in the Neolithic of the Mediterranean, for instance," Daniel Brown, an astronomy lecturer at Nottingham Trent University, told me in an email. The idea Brown and his colleagues are exploring is whether stellar alignment was a key component of rituals in these ancient spaces. One theory, he says, is that the structures were designed to reveal a certain star to a person staying in the chamber-where the aperture would make the star visible days or even a week before it could be seen otherwise.

The structures in Portugal, Brown and his colleagues say, may have been focused on Aldebaran, the brightest star in the constellation Taurus, where it appears as the twinkly reddish eye of the bull. Millennia after these dolmen were built, spacecrafts enabled humans to see Aldebaran as it slipped behind Saturn's rings. The star is now visible with astounding clarity through massive telescopes on Earth, too.

Telescopes have now become sacred structures in their own right. Today they're built like temples-solitary monuments on towering mountaintops. But even in the age of great optical instruments, humans haven't stopped building immersive lensless apertures. One example is Star Axis, an art installation in the New Mexico desert that's been under

construction for 40 years-a long time for a single work of art, perhaps, but barely a blip in the history of admiring the sky.

Please visit the site: <http://www.theatlantic.com/technology/archive/2016/06/oldest-telescope/489362/>

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**BONES OF EXTINCT FISH FOUND IN  
SHIPWRECK OFF ISRAEL'S COAST -  
GENETICISTS IDENTIFY BONES IN 7TH-  
CENTURY VESSEL AS BELONGING TO  
SUBSPECIES OF TILAPIA, AKA ST. PETER'S  
FISH, USUALLY A FRESH-WATER SPECIES,  
BY NIR HASSON**

Genetic tests conducted on fish bones found in a shipwrecked vessel off the coast of Israel, south of Haifa, indicate that a now-extinct subspecies of tilapia existed as early as 1,300 years ago in the country.

The seventh-century ship (from the early Islamic period) was found in the Mediterranean Sea about 100 meters away from Dor Beach, at the foot of the Carmel Mountains.

The species of tilapia that still exists in Israel, and popularly called St. Peter's fish (musht, in Hebrew), typically lives in fresh water.

The underwater excavation team that studied the wreck was headed by Prof. Yaacov Kahanov, a University of Haifa marine archaeologist. Among the findings were urns containing thousands of bones of small fish.

The bones were sent to the genetics laboratory of Prof. Micha Ron of the Volcani Center, a government-sponsored agricultural research organization located outside Tel Aviv.

"We sequenced a section of DNA and compared the findings to all the fish that exist today. We found great similarity to tilapia - with the exception of one mutation," says Ron. The mutation appeared again and again in all the bones that were examined, which means that the bones probably belong to a subspecies that can no longer be found in nature.

Besides fresh water sources, the ancient species tilapia apparently lived in the estuaries of rivers flowing to the Mediterranean. It is also possible that at some point, the fish was bred inside special installations, perhaps a type of ancient fish farms. Structures of this type have been discovered at excavations at the Jisr al-Zarqa and Caesarea beaches, which are not far from Dor.

Kahanov emphasizes that the urns in which the fish bones were found were in the bottom part of the ship.

"It's possible that the sailors wanted to keep them at a low temperature," he says. "These are very small fish and they may have been used to prepare a fish stock, a kind of sauce we are familiar with from the Roman period. They may have wanted to trade in them or to use them aboard the ship."

Please visit the site: <http://www.haaretz.com/jewish/archaeology/.premium-1.726236>

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## **CARTHAGE ARCHAEOLOGISTS DIG UP SMART COOLING SYSTEM FOR CHARIOT RACERS THE ANCIENTS WERE MADLY OBSESSED BY CHARIOT RACING 2000 YEARS AGO BUT IN THE HEAT OF NORTH AFRICA, THE HORSES WOULD HAVE FAINTED, BY PHILIPPE BOHSTROM**

On the north coast of Africa lie the ruins of a city that came within a hairbreadth of defeating the might of Rome. Now archaeologists digging at the famous Circus of Carthage have revealed a startlingly advanced system to cool down horses and chariots during races.

The ancients were obsessed with chariot racing. More than a half-century on, the chariot race in the 1959 Hollywood blockbuster "Ben-Hur" is still one of the most memorable scenes in cinemascope history. But even horses can faint, certainly in the burning heat of North Africa.

Key to the discovery of the clever cooling system at the Circus of Carthage, the biggest sporting arena outside Rome, was the detection of water resistant mortar.

"This kind of mortar is called hydraulic mortar. It's a type of waterproof lime mortar mixed with crushed and pulverized ceramics that the Romans used in hydraulic engineering," says Frerich Schön of Tübingen University, the water technology specialist who first spotted the material, to Haaretz.

### **A deadly profession**

The discovery was made at the spina, the median strip of the circus, around the ends of which the charioteers would turn during races. The spina would often feature ornate columns and statues.

As was the custom in ancient racetracks, water basins had been placed along the spina of Carthage, the archaeologists realized. Sparsores - sprinklers - would dip clay amphorae into the basins, from which they would sprinkle water on the chariots, says Dr Ralf Bockmann, who is directing the excavation. Together with his Tunisian colleague, Dr Hamden Ben Romdhane. (The excavation is being jointly undertaken by the German archeological institute in Rome and the Institut National du Patrimoine of Tunisia.)

This is a common technique at circuses; well-preserved water basins have also been found at the circus of Maxentius outside of Rome on the Via Appia. Water basins of the type are shown on a mosaic from Carthage showing the circus and the spina.

As for the sparsores, this was evidently not a job for the faint of heart. "The sparsores would usually be on foot, directly on the spina, presumably at the level of the arena, to cool down the chariot wheels driving by at high speed. How exactly the cooling was

organized is not clear. But for sure, it must have been a dangerous business," adds Bockmann.

### **Blood sports and charioteer fan clubs**

Pioneering, albeit preliminary, geophysical explorations in the 1970s, measured the Carthage arena at 500 meters in length, which is around 80 meters shorter than the Circus Maximus in Rome itself. American excavations in the 1980s measured the width at 77 meters, only 2 meters short of the Circus Maximus. Whereas the Circus Maximus could accommodate over 150,000 people, the capacity of the circus at Carthage seems to have been smaller.

How do we know the ancients were mad for racing? The evidence is legion, including a collection of poems edited in Carthage in the early 6th century CE, which both praises and mocks charioteers. There are mosaics showing the circus itself and inscriptions naming famous drivers and horses.

Gambling on chariot racing was probably as popular as sports betting today. The games were a blood sport and involved frantic danger and excitement. Forget NBA stars or even David Beckham's quarter-billion dollar paycheck: Charioteers were the highest-paid sportsmen in history. One second-century charioteer won almost 36 million sesterces during his career - equivalent to \$15 billion today.

The charioteers wore distinct colors, and each team represented a certain group in society, either political or social. Supporters would erupt in frenzy when their favorite team appeared. Charioteers became so popular that people adorned their houses with their portraits. And clashes between rival groups of fans were as commonplace as today. For instance, the Roman historian Tacitus reports on a riot during a sporting event in Pompeii, when Pompeians brawled with fans from the neighboring city of Nuceria.

One thing we do know is that in ancient Greece, women were not allowed to watch sports, let alone participate in them. They could however enter equestrian contests through ownership. The chariot race in Olympia was won by a team owned by a Spartan princess, Cynisca, not once but twice; her triumph was influential in getting other women to field teams that won.

Although we have no record of how much she won, Cynisca - daughter and sister of kings - was the first woman to have a hero shrine erected in her name and to be honored with a statue of herself in the Temple of Zeus in Olympia. Only Spartan kings were graced in this way.

Yet another discovery arising from study of the spina is that the Carthage circus had to have been built in at least two phases. "We cannot say yet if these phases indicate a restructuring or enlargement, or simply are the result of distinctive actions within a single construction process," Bockmann clarifies.

Aside from the excavation of the spina itself, two other trenches were dug within the monumental Circus. One was to investigate the forerunners of the circus - the buildings that had existed before it, and were torn down to build it. One building seems to have been a mausoleum. Others are older and may well be of Punic origin - built by the original Carthagians, who trace their origins to the Phoenicians and Berbers. (Though genetic analysis of a 2,500-year old Carthagian man, whose body was accidentally

discovered by gardeners in 1994, seems to indicate he came from Portugal, while the Phoenicians are thought to have come from Lebanon and the Berbers were indigenous to North Africa.)

The second trench is investigating the "bleachers" - the section where spectators sat and cheered on their favorites. The archaeologists hope this section of the dig will enable the façade and grand stands of the circus to be reconstructed - and will also shed light on the infrastructure of the organization of the games and its connection with the urban topography.

"The circus of Carthage played a great role for civic life as a monument, where large parts of the population would gather to watch the races, over hundreds of years," Bockmann said.

The circus region, which served to entertain the masses for centuries, is the only part of ancient Carthage that has not been extensively built over in modern times. The archaeologists believe that its relatively untouched nature can bring fresh insights on the development of the ancient city. For instance, "It will be very interesting to reconstruct how the terrain was prepared for the erection of the circus, and what kind of usage dominated before," Bockmann told Haaretz, adding that the study is just starting and is planned to go on for years.

**Please visit the site: <http://www.haaretz.com/jewish/archaeology/1.727849>**

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## **PYRAMID-SHAPED NOAH'S ARK**

Was Noah's Ark Shaped Like a Pyramid? Digitized Dead Sea Scrolls Reveal New Secrets Previously hidden sections of text on the ancient parchments are answering some long-standing questions - and raising others.

The roof of Noah's Ark was pointed, the ptil Judah gave Tamar in the book of Genesis was his belt, and residents of Qumran, where the Dead Sea Scrolls were found, believed money could buy amnesty for sins. The above conclusions come from a new reading of the Dead Sea Scrolls - a reading made possible by a project to scan the scrolls with sophisticated technology that has revealed letters and words that were previously illegible. [... ]

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## **STRUCTURES AT UŞAKLI MOUND MAY BE ANCIENT ZIPPALANDA**

This year's excavations at the Uşaklı Mound in Yozgat have unearthed two structures that may be part of "Zippalanda," an ancient Hittite center.

Last year, 4,000 year-old cuneiform scripts were found at the mound in the Central Anatolian province of Yozgat's Sorgun district.

Excavations started in 2008 in the Uşaklı Mound, close to the Büyük Taşlık village, by a team headed by Florence University Professor Stefania Mazzoni. This year works at the ruins have unearthed two structures, possibly a temple and a castle.

The deputy head of the excavations, Florence University's Valentina Orsi, said they were trying to know the field with a previous surface survey and the mound had "significant historical features."

Four pieces of cuneiform script and pottery found in the field show that the mound developed in the Hittite era, said Orsi.

"The Uşaklı Mound might be Zippalanda, which is mentioned in ancient Hittite documents. Its geographical location and closeness to the Kerkenes Mountain verify this estimation. Excavations that were carried out in 2013 in collaboration with Yozgat Museum and Florence University, unearthed a big public structure, which has a deep and strong foundation," she added.

Orsi said they discovered important findings every year at the site since 2008.

"So far we have found two important buildings. One is most probably a sacred place, which we think is a temple. We think the other is a castle. The findings show us that the region was a very important settlement, a big city. We also found five cuneiform scripts from the Hittite era. They are different from each other, showing that different cities had relations with each other in the Hittite era," she added.

**Please visit the site: <http://www.hurriyetdailynews.com/structures-at-usakli-mound-may-be-ancient-zippalanda-.aspx?pageID=238&nid=100977>**

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**ANCIENT ROMANS, JEWS INVENTED TRASH  
COLLECTION, ARCHAEOLOGY OF JERUSALEM  
HINTS - ARCHAEOLOGISTS DIGGING UP 2000-  
YEAR-OLD LANDFILL THINK COMBINATION OF  
ROMAN EFFICIENCY AND JEWISH OBSESSION  
WITH CLEANLINESS CREATED A UNIQUE  
SYSTEM TO TAKE OUT THE TRASH,  
BY ARIEL DAVID**

Israeli archaeologists have stumbled upon the mother of all garbage dumps: a massive landfill from early Roman times that may have been the result of the most sophisticated trash collection system in antiquity.

Layer upon layer of waste that was efficiently collected, piled up and buried some 2,000 years ago has been dug up on the slopes of the Kidron valley, just outside the Roman-era walls of Jerusalem.

Coins and fragments of pottery show the landfill was in use for about seven decades, from the beginning of the first century CE until the period of the Great Jewish Revolt against the Romans, which ended with the destruction of Jerusalem in 70 CE, says Yuval Gadot, a Tel Aviv University archaeologist who led the dig.

The landfill, which was excavated in 2013-2014 in conjunction with the Israel Antiquities Authority, rose to a towering 70 meters in height, from the bottom of the valley to the walls of the city. It was quite unusual in its size, Gadot says.

It seems uncommon, he says. "If you look at history, usually people don't do that. They usually lived with their garbage, or they used it at some point, or it just sat out there in the street," he says.

Going back thousands of years before the Roman era, as far back as the Neolithic, humans would dig pits for their garbage. They might collect it for later use as fertilizer, or use it to level terrain when constructing new buildings - both practices are still done today. But ancient examples of large-scale collection and long-term storage of trash in a landfill are scarce, Gadot says.

**Down the drain in Rome**

Beyond Jerusalem, across the rest of the Roman Empire, garbage disposal was a chronic problem, especially in large cities.

Rome has the Monte Testaccio, an artificial mound still visible today made up of millions of fragments of discarded amphorae. In this case, it isn't that the pottery pieces were collected from around the city - this was where the adjacent port on the River Tiber dumped trash.



In Rome and Pompeii, trash was sometimes disposed of in the sewage system, which was commonly used to get rid of anything undesirable. Even the bodies of the third-century emperor Heliogabalus, who was murdered by his guards, and of the Christian martyr Saint Sebastian were dumped in Rome's main sewer, the Cloaca Maxima.

But most of the domestic trash was simply thrown into the street, usually after dark and with little regard for passersby, so much that the satirical poet Juvenal remarked that one should always make a will before going out for dinner, "because different forms of death can rain down from any open window."

When a young and ambitious Vespasian - later an efficient administrator, ruthless repressor of the Jewish Revolt and emperor - was in charge of city maintenance, he failed so spectacularly to clear the streets that, as punishment, the emperor Caligula (not the sanest of Roman rulers) had him covered in mud.

### **Thou shalt take out the trash**

In Jerusalem, however, it seems that the system worked. The landfill located on the eastern slopes of the city is not just impressive for its size: its alternating layers of ancient trash and soil suggest there was a deliberate attempt to systematically cover the garbage to prevent smells and deter scavengers, Gadot says.

It isn't that the people of ancient Jerusalem organized to collectively and obediently throw their dross over the city walls. "It looks like there was a mechanism in place that cleared the streets, cleared the houses, using donkeys to collect and throw away the garbage," Gadot speculates.

The system may have developed out of a combination of Roman administrative knowhow and a growing observance among Jews of religious purity norms, researchers theorize.

Jews in early Roman Jerusalem were obsessed with purity and impurity, as shown by the proliferation of mikvehs (ritual baths), the frequent use of stone vessels (which were believed to be impervious to impurity) and the near absence of imported pottery.

"It could be that it became a norm in Jerusalem that you have to take out the garbage, because it's impure and has to be brought outside the city," Gadot suggests. "It's not the municipality saying so: God says so, and that makes it easier."

Gadot hesitates to say whether Jerusalemites were the first in history to organize such a large-scale waste management system.

"I don't know if it's the first, but it's unique," he told Haaretz in a recent interview. "Maybe there's another landfill in Rome that was for domestic use, but at the moment we don't know about it."

One problem is also that archaeologists usually prefer to excavate large, impressive ruins rather than mundane sites like garbage landfills.

### **Fish meals in a Jewish city**

Most of the garbage in the landfill is leftovers from "a typical middle-class lunch or dinner at the time," including animal bones, charred remains of grains, olive pits and wood from household ovens.

The picture that emerges is of a fairly wealthy city, with plenty of meat to go around and even fish brought in from distant locations like the Mediterranean and the Sea of Galilee.

According to Abra Spiciarich, a student whose MA thesis focused on the animal bones found in the landfill, the meat mostly came from goats, sheep, with a smaller proportion of cattle and chickens. This confirms that Jerusalem's population was overwhelmingly Jewish at the time, given the complete absence of pig bones and the marks of kosher slaughtering found on many of the remains.

Archaeologists also found waste from the manufacture of glass and stone vessels, which were apparently made in small household workshops in the city.

But very few bronze and iron artifacts have been found, not because they weren't in use, but apparently, because they were being recycled.

"It seems that any material that they could recycle, they collected separately and it never reached the landfill. It was melted or reused," Gadot says. "Maybe at the domestic level they sold scraps of metal to someone who specialized in that."

#### **A Roman mop-up operation?**

Not everyone agrees with Gadot's reading of the site.

"We really don't know what caused this accumulation," says Alon de Groot, an Israel Antiquities Archaeologist who has participated in excavations in the area just above the landfill.

That neighborhood, today known as the City of David, is considered the oldest part of the city and its original nucleus. De Groot noted that the area was destroyed when the Romans captured Jerusalem at the end of the revolt. Later, they used the ruined buildings as a quarry to reconstruct the city as a Roman settlement called Aelia Capitolina.

"Then they just cleared up the whole hill, and as a result you find the garbage below, but this is not really garbage from that period: it's mostly a result of the cleaning up of the area above after the city was destroyed," de Groot told Haaretz in a telephone interview.

Gadot says he remains convinced that the site functioned as Jerusalem's garbage dump, arguing that if parts of the ruined city had simply been pushed down the slope, archaeologists would have found at least a few large stones used in construction, instead of just tiny pieces of pottery, bones and organic residue.

Helena Roth, an archeobotanist on Gadot's team, studied the charred remains of wood found in the landfill and compared them to samples taken from the destruction layers in the city itself. In the landfill she mostly found traces of olive and fig trees - which surrounded the city and probably provided a cheap source of fuel. In the city itself, she also found rare or imported materials like boxwood and Lebanese cedar, likely the remains of luxury furniture that was burned down with the rest of the city.

The fact that the dump and city had different wood remains supports the idea that the landfill functioned as a garbage storage site, Roth says.

**The holiest garbage**

Another comparative study conducted by the Tel Aviv team was with materials found about a decade ago in a smaller landfill from the same period, very near by - just under the Temple Mount.

There, a team led by archaeologists Guy Bar-Oz and Ronny Reich had found significant amounts of pigeon bones.

Because these birds were often used a sacrificial animal in ancient Israel, they speculated that this dump was used to collect the remains of the cultic activities that took place at the nearby Temple. Gadot says that no pigeon bones have been found in the city dump he excavated, strengthening the theory that what was found in the northern landfill by his colleagues was indeed "holy garbage."

Please visit the site: <http://www.haaretz.com/jewish/archaeology/.premium-1.727585>

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## **40,000-YEAR-OLD GRINDSTONE** **UNEARTHED IN WESTERN GALILEE CAVE** **YORI YALON, BY DANIEL SIRYOTI AND** **ISRAEL HAYOM STAFF**

Despite the often oppressive heat, summer is the main season for archaeological excavations in Israel, and this summer got off to a hot start in more ways than one when three remarkable finds were reported at the end of June.

Tenth-grade students volunteering on an Israel Antiquities Authority dig at a stalactite cave near Moshav Manot in the Western Galilee earlier in June discovered a 40,000-year-old grindstone that was apparently used to prepare food and tools.

Excavation director Yoav Lerer of the IAA described the thrill sparked by the discovery: "One of the students came up to me and showed me the stone that had been found outside the cave. When we explained that it was an object that had been used by ancient man, there was a lot of excitement. It's a greeting from the people who lived here, right where the students live, 40,000 years ago."

Lerer said that the grindstone was basalt, "which is created when lava erupts out of a volcano and is not indigenous to the Western Galilee area. It looks like [either] the raw material or the tool itself was brought here from the Lower Galilee by residents of the cave."

The stalactite cave where the dig is underway was discovered in 2008, when heavy mechanical equipment employed in an infrastructure project broke through its ceiling. The IAA staff who arrived at the site found a large stalactite cave that contained finds that indicated that it had been inhabited by Paleolithic man. Since then, Dr. Omry Barzilai of the IAA; Dr. Ofer Marder of Ben-Gurion University of the Negev; and Professor Israel Hershkovitz of Tel Aviv University have been overseeing continuous excavations at the site. The project receives assistance from the Dan David Fund, the Israel Academy of Sciences and Humanities, the Jewish National Fund and the Maaleh Yosef Regional Council.

Elsewhere in northern Israel, University of Haifa archaeologists have unearthed a Roman gate at the Hippos-Sussita archaeological site east of the Sea of Galilee.

The gate is expected to shed light on another recent find, a unique bronze mask of the Greek god Pan, which was discovered at the same site a year ago. Pan, who is represented as half human, half goat, is the Greek god of music. Because no comparable discoveries have been made, researchers found it difficult to date the mask.

Dr. Michael Eisenberg, who is supervising the excavation, said that "now that the entire gate has been unearthed, we have more solid information [with which] to date the mask, as well as a hint of what it might have been used for."

Archaeologists report that the gate originally stood over 6 meters (20 feet) high and the structure to which it belonged, which is higher, appears to date back to the days of Hadrian (117-138 C.E.)

Meanwhile, at the other end of the country, a lifeguard out for a morning run at the Tel Ashkelon State Beach last week discovered something curious -- an ancient oil lamp.

Meir Amshik said he noticed that part of the cliff face had crumbled and approached the rubble. "I saw the intriguing oil lamp lying there, intact. I thought it might be an ancient artifact, so I picked it up. Along with Avi Panzer, director of the lifeguard station, we contacted the Israel Antiquities Authority."

It turned out that the artifact was indeed a small lamp that dates to the 12th century C.E.

Guy Fitoussi, an inspector from the IAA's Unit for the Prevention of Antiquities Robbery, noted, "The lifeguards from the Israel Parks and Nature Authority not only save people, they also save antiquities."

According to Saar Ganor, an archaeologist for the IAA Southern District, "the oil lamp represents part of the cultural wealth of ancient Ashkelon, which was a city of commerce."

**Please visit the site:**

[http://www.israelhayom.com/site/newsletter\\_article.php?id=34625](http://www.israelhayom.com/site/newsletter_article.php?id=34625) [Go there for pix]

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## DAVID AND GOLIATH MOSAIC

Une mauvaise photo est la seule trace d'une mosaïque d'église pillée en Syrie du Nord, représentant le combat biblique de David et Goliath. Questions à Widad Khoury de la Direction des Antiquités et des Musées de Syrie (DGAM).

Propos recueillis par Estelle Villeneuve

-Le Monde de la Bible : D'où vient cette mosaïque ?

Widad Khoury : Sans doute de la région d'Idlib, en Syrie du Nord, où une inspectrice de la DGAM a pris des pillards sur le fait. Elle a pu envoyer cette photo prise avec son téléphone portable, mais nous n'en savons pas plus car la mort l'a fauchée le lendemain. La mosaïque provient sûrement d'une église, car sa dédicace comporte un titre ecclésiastique, « périodeute ». On peut la dater de la fin VI<sup>e</sup>-début VII<sup>e</sup> siècle ap. J.-C.

-MdB : Que représente-elle ?

W. Khoury : Un épisode biblique bien connu, mais très rare en iconographie byzantine : le triomphe de David sur le géant philistin Goliath. L'histoire se déroule en deux scènes principales, accompagnées de légendes grecques qui ont été lues par l'épigraphiste Denis Feissel. À droite, Goliath armé menace le roi d'Israël Saül qui se demande que faire. Celui-ci se tient avec sa suite sur les murailles de Jérusalem ; en dessous est représentée l'arche d'Alliance. Sur la scène de gauche, David foule des pieds le Philistin, dont il tient la tête au bout d'une lance, sous l'acclamation des femmes des villes.

-MdB : L'image est-elle fidèle au texte de la Bible ?

W. Khoury : L'iconographie de la scène de gauche s'inspire directement de l'histoire de David et Goliath (cf. 1 Samuel 17,48-51 et 18,6-7), mais les détails comme le bouclier et l'oiseau montrent que le texte de référence était la Bible grecque. Les scènes de droite inscrivent l'exploit de David, prélude à son accession à la royauté, dans le cadre plus général du triomphe d'Israël sur les Philistins, incluant la capture et la restitution de l'arche de Yahvé.

-MdB : Que pouvait signifier ce thème pour les commanditaires ?

W. Khoury : On peut le rapprocher d'un événement local survenu en 628 : la libération d'Antioche, due à la victoire de l'empereur byzantin Héraclius sur les Perses, suivie du retour de la sainte Croix à Jérusalem en 629. Ce rapprochement entre la victoire d'Héraclius et celle de David, le retour de l'arche d'Alliance et celui de la vraie Croix se retrouvent chez un poète contemporain et sur des plats d'orfèvrerie trouvés à Chypre. Les commanditaires de la mosaïque ont eux aussi interprété et glorifié l'exploit de l'empereur à la lueur de la Bible, comme un signe de la providence.

Légende : mosaïque à sujet biblique provenant de Syrie du Nord, environ 6 x 4 m. © DGAM, Syrie

Please visit the site: <http://www.moneddelabible.com/mosaïque-pillée-david-et-goliath/> [Go there for pict]