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Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

- Δεκέμβριος 2018 -

Opinion is the medium between knowledge and ignorance.
(Plato)

Newsletter of the Hellenic Society of Archaeometry

- December 2018 -

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ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS

PROHITECH 2020, 4TH INTERNATIONAL CONFERENCE ON PROTECTION OF HISTORICAL CONSTRUCTIONS, 6-8 JULY 2020, ATHENS, GREECE

Objectives

The previous meetings of PROHITECH were held in Rome, Italy (2009), in Antalya, Turkey (2014) and in Lisbon, Portugal (2017).

The PROHITECH Conference series offers an important platform to researchers, engineers, architects and other specialists to present and discuss a wide variety of topics related to the protection of historical constructions. The topics range from structural and earthquake engineering, intervention strategies, materials and technologies, architecture and urban planning, represented by a showcase of diversified case studies covering different construction materials. A novel set of subtopics will also be addressed, such as sustainability, energy efficiency, re-use and adaptation to climate changes.

Sessions related to specific topics of the Conference will be introduced by Keynote Lectures which will be complemented by contributed papers and Technical visits.

Conference Topics

STRUCTURAL AND EARTHQUAKE ENGINEERING

- Experimental Tests
- Numerical Modelling
- Protection, Repair, Retrofitting and Reinforcement
- Safety Requirements and Code Provisions
- Structural Health Monitoring and Observation
- Vulnerability and Risk Assessment

INTERVENTION STRATEGIES

- Adaptation to Climate Change
- Anamnesis, Diagnosis, Therapy and Controls
- Protection for Natural and Man-made Hazards
- Resource and Energy Efficiency and Sustainability
- Reversibility
- Robustness

MATERIALS AND TECHNOLOGIES INNOVATIVE DEVICES AND TECHNIQUES

- New Structural Materials

- Reconstruction Techniques
- Rehabilitation Interventions
- Traditional Materials and Techniques

ARCHITECTURE AND URBAN PLANNING

- Architectural Heritage
- Industrial Heritage
- Modern Movement Architecture
- Religious Heritage
- Re-Use and Valorisation of Built Heritage
- Urban Transformation and Cultural Heritage

CASE STUDIES

- Adobe and Earthen Constructions
- Masonry and Stone Constructions
- Reinforced Concrete Constructions
- Special Cases: Bridges, Coastal Constructions, Dams and Aqueducts
- Steel Constructions
- Timber Constructions

Please visit the site: <https://prohitech2020.org/>

ΣΥΝΕΔΡΙΟ 20 ΧΡΟΝΙΑ ΔΠΜΣ, ΜΕ ΤΙΤΛΟ:
«ΠΡΟΣΤΑΣΙΑ ΣΥΝΤΗΡΗΣΗ ΚΑΙ
ΑΠΟΚΑΤΑΣΤΑΣΗ ΜΝΗΜΕΙΩΝ
ΠΟΛΙΤΙΣΜΟΥ - 20 ΧΡΟΝΙΑ Δ.Μ.Π.Σ.»

Αγαπητοί συνάδελφοι,

Με τη συμπλήρωση 20 χρόνων από τη λειτουργία του Δ.Π.Μ.Σ. της Πολυτεχνικής του Α.Π.Θ. «Προστασία, Συντήρηση, Αποκατάσταση Μνημείων Πολιτισμού», στο πλαίσιο των επετειακών εκδηλώσεων, διοργανώνεται επιστημονικό συνέδριο με έμφαση στη διεπιστημονική διάσταση του προγράμματος και στην προσφορά του στην προστασία και ανάδειξη της πολιτιστικής κληρονομιάς.

Στο συνέδριο με τίτλο: «ΠΡΟΣΤΑΣΙΑ ΣΥΝΤΗΡΗΣΗ ΚΑΙ ΑΠΟΚΑΤΑΣΤΑΣΗ ΜΝΗΜΕΙΩΝ ΠΟΛΙΤΙΣΜΟΥ - 20 ΧΡΟΝΙΑ Δ.Μ.Π.Σ.» καλούνται να συμμετέχουν, ως εισηγητές, επιστήμονες που ασχολούνται με την Προστασία, Συντήρηση και Αποκατάσταση Μνημείων Πολιτισμού.

Σας ενημερώνουμε ότι η υποβολή των περιλήψεων έχει παραταθεί έως τη Δευτέρα, 31 Δεκεμβρίου 2018.

Για περισσότερες πληροφορίες μπορείτε να επισκεφτείτε την ιστοσελίδα μας: <http://20prosynapo.web.auth.gr/>

Παρακαλούμε για την κοινοποίηση της παρούσας ανακοίνωσης σε πρόσωπα ή φορείς που σχετίζονται με το πεδίο.

Σας ευχαριστούμε!

Συναδελφικά,

Η Οργανωτική Επιτροπή του Συνεδρίου ΔΠΜΣ

ΣΥΝΕΔΡΙΟ: "ΠΡΟΣΤΑΣΙΑ, ΣΥΝΤΗΡΗΣΗ ΚΑΙ ΑΠΟΚΑΤΑΣΤΑΣΗ ΜΝΗΜΕΙΩΝ ΠΟΛΙΤΙΣΜΟΥ - 20 ΧΡΟΝΙΑ Δ.Π.Μ.Σ."
Α.Π.Θ.- ΠΟΛΥΤΕΧΝΙΚΗ ΣΧΟΛΗ - Δ.Μ.Π.Σ. Προστασία, Συντήρηση & Αποκατάσταση Μνημείων Πολιτισμού <http://20prosynapo.web.auth.gr/>

CALL FOR PAPERS, TRIAL BY FIRE **CONFERENCE, 17-18 MAY 2019, INSTITUTE** **OF ARCHAEOLOGY, UCL**

A free interdisciplinary conference about the transformative power of fire

Whether your interest lies in archaeomaterials, burned bone, pyrotechnology, or accidental burning, fire always leaves its mark and a wealth of information behind.

This conference aims to explore these events by bringing together ideas from across archaeological and anthropological sub-disciplines. Abstracts will cover a range of topics and case studies, however the conference aims to answer the following questions:

- **Can fire be considered an artefact?**
- **How have people engaged with fire over the course of history?**
- **What can the aesthetics of a thermally altered object tell us about the burning event?**
- **How has the study of fire evolved within the literature? How can fire be harnessed as an experimental tool moving forward?**

You are invited to contribute your work towards the development of this interdisciplinary understanding of fire.

Abstracts are due by 31 January 2019

To submit, register, or for more information, visit trialbyfireteam.com

-Conference organisers: Lisa Monetti and Kate Gafner (Institute of Archaeology)

UK ARCHAEOLOGICAL SCIENCES **CONFERENCE, 24-26 APRIL 2019,** **MANCHESTER**

The University of Manchester will be hosting the UK Archaeological Sciences Conference (UKAS) 2019 and is looking forward to welcoming the archaeological science community to Manchester, the first industrial city and academic home to many famous scientists including Boyd Dawkins, Chadwick, Dalton, Drew-Baker, Joule, Ollerenshaw, Rutherford, Stopes, J.J. Thomson and Turing.

The conference will take place in the Manchester Institute of Biotechnology (MIB), a few minutes walk from Manchester Picadilly train station. The Welcome Reception will be held at the Manchester Museum fossil gallery on the 24th April with some of Boyd Dawkins' faunal collections in the surrounding displays. The conference dinner will be held on the 26th April at Christies Bistro, based in the nearby old Science Library of Owens College.

Information regarding key dates is available on the conference website:
<https://ukas2019.com/>

The call for papers, abstract submission and registration will open shortly, and welcome further queries to ukas.manchester@gmail.com

Sincerely

UKAS 2019 Organising Committee

GEOCHRONOLOGY SESSION AT EGU2019

Dear all,

If you are planning to attend the EGU2019 in Vienna you might consider the session .
CL1.37/GM2.9/SSP2.21/SSS3.12

Geochronological Tools for Environmental Reconstruction

<https://meetingorganizer.copernicus.org/EGU2019/session/31726>

Note deadline for support applications for early stage researchers is 1.12.2018

Best wishes and hope to see you in Vienna,

Irka, Susan, Ola and Andreas

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C14 analysis <http://www.ams.ethz.ch/LIPServices/c14.html>

& <http://www.ams.ethz.ch/LIPServices/radiocarbon-dating-and-protection-of-cultural-heritage.html>



2ND INTERNATIONAL ISPRS / CIPA
WORKSHOP "UNDERWATER 3D
RECORDING AND MODELLING", 2-3 MAY
2019, LIMASSOL, CYPRUS

Dear friends and colleagues,

The 2nd edition of the workshop **UNDERWATER 3D RECORDING & MODELLING** will be held in **Limassol** (Cyprus) on **May 2-3, 2019**.

The event is organized as an [ISPRS](#) and [CIPA](#) workshop and follows on from a successful workshop held in 2015 in Sorrento (Italy), first on this topic and aiming to bring together researchers, users and person interested in the field of **underwater 3D surveying (photogrammetry, bathymetry, etc.)**, underwater **archaeology**, **3D metrology**, **Virtual and Augmented reality**.

The **key topics** of the event include but are not limited to:

- underwater photogrammetry
- underwater platforms (ROV, robots, etc.)
- 3D bathymetry
- Underwater 3D metrology
- active and passive sensor integration and characterization
- data processing and 3D modeling
- underwater archaeology and heritage
- marine biology
- virtual and augmented reality

IMPORTANT DATES:

Abstract submission:	10 December 2018 (1000 words, possibly with figures no specific template given)
Notification of acceptance:	15 January 2019
Full Paper submission:	1 March 2019 (ISPRS format , max 8 pages)

The accepted articles will be published in the [ISPRS International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences](#)

The best papers of UNDERWATER 3D RECORDING & MODELLING 2019 will be invited to submit an extended version in a special issue of [MDPI's Remote Sensing Open Access Journal](#). The 3 best papers will be awarded with free submission fees.

KEYNOTE SPEAKERS:

- Rafael Garcia and Nuno Garcias (Universitat de Girona, Underwater Vision and Robotics group)
- Jon Henderson (University of Nottingham, Department of Classics and Archaeology)

REGISTRATION FEES:

Early Bird	Student	150	Till 25th of January 2019
	Full	200	
Regular	Full	240	From 26th of January to 1st of May 2019
	Student	190	
On-site	Full	280	From 2nd to 3rd of May 2019
	Student	230	

VENUE

The event will take place in Limassol, at the Cyprus University of Technology facilities.

Limassol is a cosmopolitan sea-side destination with a unique identity, based on its rich history and culture its special characteristics and the wide variety of options available for everyone. Find more info and guides at: [Visit Cyprus](#) | [Discover Limassol](#) | [Limassol official city guide](#)

REACH LIMASSOL

By plane: You can take a flight to the nearest airports Larnaca and Paphos. These international airports serve scheduled airlines and are at about 40 minutes drive from Limassol. You can opt for a local bus or taxi service after landing at any of these airports.

MORE INFO ON THE EVENT: <http://3d-underwater.cut.ac.cy/>

MORE INFO ON ISPRS WG II/9 - Underwater Data Acquisition and Processing:
<http://www2.isprs.org/commissions/comm2/wg9.html>

On behalf of the workshop committee,

Fabio Menna

ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ –
JOB VACANCIES/FELLOWSHIPS

EDGAR J. PELTENBURG POSTDOCTORAL
FELLOWSHIP IN CYPRIOT PREHISTORY

The Cyprus American Archaeological Research Institute (CAARI) in Nicosia is very pleased to announce the establishment of a new postdoctoral research fellowship in honour of the late Professor Eddie Peltenburg, which has been initiated with exceptional donations by his widow, Dr. Diane Bolger (University of Edinburgh) and one of his former PhD students, Dr. Carole McCartney (University of Cyprus).

Although the Peltenburg Fellowship will be open to archaeologists of all ages and nationalities, priority will be given to outstanding young scholars who are within 5 years of having been awarded a PhD and who aim to produce a significant piece of archaeological research on some aspect of Cypriot prehistory during the term of the fellowship.

The term of the fellowship will be one academic year (nine months), with the possibility of renewal for an additional nine months in exceptional cases; the first round of applications will be announced very soon in order to appoint the first Fellow in 2019.

PHD STUDENTSHIPS IN AEGEAN ARCHAEOLOGY, UNIVERSITY OF MANCHESTER

The Department of Classics, Ancient History and Archaeology at the University of Manchester is pleased to invite applications for funded doctoral study in Archaeology, including Aegean Archaeology. Funding is available through the AHRC North West Consortium Doctoral Training Programme (Heritage Pathway) and through PhD Awards from the School of Arts, Languages and Cultures as well as other schemes.

Archaeology at the University of Manchester includes academic experts in a broad range of aspects covering the Palaeolithic to the Iron Age and stretching from Britain and northern Europe to Greece and Near East. Thematically, our research foci revolve around a number of broad themes, such as history, theory and practice of Archaeology; the archaeology of cultural identity; landscape, monuments and architecture; technology and society; death and the body; and archaeological heritage and the contemporary significance of the past.

Archaeology is part of a department that also includes Classics and Ancient History and (from September 2019) Egyptology, thus offering unique opportunities for collaboration and interdisciplinary approaches to the past. We are part of the Manchester Centre of Archaeology and Egyptology (<https://www.mcae.manchester.ac.uk/>) which brings together scholars from the Biomedical, Geological and Biomolecular sciences, as well as the Museum who regularly act as co-supervisors to our students. The Department comprises over 20 permanent staff plus several temporary staff including postdocs, a dedicated fieldwork and lab technician, a departmental reference library and common room. Our doctoral students participate in a thriving disciplinary research culture. We have regular research seminars and have a weekly departmental lunch for all staff and postgraduates. Many of our students undertake some undergraduate teaching following appropriate training. For further details, please visit our departmental staff profiles website: <https://www.alc.manchester.ac.uk/archaeology/about/people/>

Qualifications applicants should have:

Applicants must hold or expect to achieve a Masters-level qualification, which we would expect to be at distinction level, or equivalent; they must have a first-class Honours degree (or non-UK equivalent); and they must have developed a strong and high quality research proposal. Potential applicants are requested in the first instance to contact their preferred PhD supervisor and Dr Ina Berg (PGR Director; ina.berg@manchester.ac.uk) with an outline of their academic background and proposed area of research.

Amount of funding available and eligibility:

3-year full-time studentships (part-time awards are also available). Subject to residential eligibility status, the AHRC (NWCDTP) award covers tuition fees, maintenance stipend and opportunity to apply for additional funding towards fieldwork and conference costs. The School of Arts, Languages, Cultures' PhD Studentships cover tuition fees and a maintenance stipend. All awards are considered on a competitive basis.

Further information on available funding:
<https://www.manchester.ac.uk/study/postgraduate-research/funding/opportunities/>

Nationality restriction:

AHRC (NWCDTP) awards are open to UK and EU nationals.

The School of Arts, Languages, Cultures' PhD Studentships are open to all nationalities.

For further information on **all** available funding:
<https://www.manchester.ac.uk/study/postgraduate-research/funding/opportunities/>

Closing date for applications: Candidates must have submitted an application to study a PhD at the University of Manchester by Monday 14 January 2019.

Contact for further information:

Dr Ina Berg, Postgraduate Research Director, Department of Classics, Ancient History & Archaeology (ina.berg@manchester.ac.uk)

How to apply:

For information on applying to the University of Manchester for a PhD in Archaeology, please visit this webpage: <https://www.manchester.ac.uk/study/postgraduate-research/programmes/list/02893/phd-archaeology/>

THE MALCOLM H. WIENER LABORATORY **FOR ARCHAEOLOGICAL** **SCIENCE ANNOUNCES** **FUNDING OPPORTUNITIES**

The Malcolm H. Wiener Laboratory for Archaeological Science of the American School of Classical Studies at Athens currently offers two different types of Fellowship funding: a pre-doctoral or post-doctoral Research Associate position of up to nine months as well as a pre-doctoral (2 year term) position. Applicants are welcome from any college or university worldwide. Independent scholars are also welcome to apply.

Priority will be given to question-driven research projects that address substantive problems through the application of interdisciplinary methods in the archaeological sciences. Laboratory facilities are especially well equipped to support the study of human skeletal biology, archaeobiological remains (faunal and botanical), environmental studies, and geoarchaeology (particularly studies in human-landscape interactions and the study of site formation processes). Research projects utilizing other archaeological scientific approaches are also eligible for consideration, depending on the strength of the questions asked and the suitability of the plan for access to other equipment or resources not available on site.

Research Associate for 2019-2020

- Current competition begins in fall of 2018 for the 2019-2020 academic year (January 15, 2019, deadline for applications)
- Term variable, up to 9 months
- Eligibility limited to individuals actively enrolled in a graduate program and individuals with a higher-level degree in a relevant discipline
- Stipend: variable up to \$7,000

Pre-Doctoral Fellowship for 2019-2021

- Current competition begins in fall of 2018 for the 2019-2021 academic year (January 15 deadline for applications)
- 2 year term
- Eligibility limited to individuals actively enrolled in a graduate program who have passed all qualifying exams and have an approved Ph.D. proposal
- Stipend: \$20,000 per annum

For more information and instructions on how to apply:
<https://www.ascsa.edu.gr/research/wiener-laboratory/fellowships-and-research-associate-appointments>

The American School of Classical Studies at Athens does not discriminate on the basis of race, age, sex, sexual orientation, color, religion, ethnic origin, or disability when considering admission to any form of membership or application for employment

Alicia M. Dissinger, PhD

Programs Administrator
American School of Classical Studies at Athens
adissinger@ascsa.org



ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS
APPLICATIONS FOR 2019 MAT GRANTS
NOW OPEN

The Mediterranean Archaeological Trust (MAT), set up in 1959 for the promotion of the study of archaeology, invites applications for grants, made on a competitive basis, for expenses in 2019-2020, in the preparation for final **publication** of material from archaeological **excavation or fieldwork** in the Mediterranean world.

For further information, please go to:

<https://medarchaeotrust.org/2018/11/12/applications-for-2019-grants-open/>

GEOARCHAEOLOGY FIELD SCHOOL AT THE ATHENIAN AGORA

Dear colleagues,

The Malcolm H. Wiener Laboratory for Archaeological Science (ASCSA) in collaboration with the ASCSA Excavations at the Athenian Agora offers a full week-long **Field School on Site Formation, Stratigraphy, and Geoarchaeology in the Athenian Agora**. Dr. **Panagiotis (Takis) Karkanas**, director of the Wiener Laboratory and **Paul Goldberg**, Professorial Research Fellow University of Wollongong, will supervise the intensive field school. The course will take place from **June 2 to 8, 2019**.

Deadline: March 1, 2019

Registered students will be involved in interdisciplinary field research in the Athenian Agora primarily focused on archaeological context, geoarchaeology, and material sciences. Through field observations, laboratory analysis, and lectures, the students will receive instruction in the study and analysis of archaeological sediments and deposits, as well as gain experience in the recording of stratigraphy, and the understanding site formation processes. A maximum of 12 students will be accepted for the course. Preference is given to advanced students and post-docs with a background in archaeology, and preferably some exposure to the natural sciences as well.

The cost for Room and Board is 300 euros for the entire week. Travel costs to Greece and to the site are not included.

Applications should be submitted no later than 1st March via the online application form: <https://ascsa.submittable.com/submit/127620/international-field-school-on-site-formation-stratigraphy-and-geoarchaeology-in>

Application materials include one paragraph explaining why the candidate is interested in participating in the course, a CV, a list of grades (unofficial transcript), and names and email addresses of two referees.

Participants who successfully complete the course of instruction will receive a certificate detailing the content of the field school.

Textbooks: *Reconstructing Archaeological sites 2019* by Panagiotis Karkanas and Paul Goldberg (Wiley Blackwell), *Practical and Theoretical Geoarchaeology 2006* by Paul Goldberg and Richard I. Macphail (Blackwell) and *Microarchaeology 2010* by Stephen Weiner (Cambridge University Press).

A syllabus will be emailed 3 weeks before the start of the field school.

For further information or questions, please contact Dr. Panagiotis (Takis) Karkanas at tkarkanas@ascsa.edu.gr

Apologies for the multiple duplicate emails.

Best wishes

Paul and Takis

Dr. Panagiotis (Takis) Karkanis
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The Malcolm H. Wiener Laboratory for Archaeological Science
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**CALL FOR ABSTRACTS - HERITAGE
JOURNAL - SPECIAL ISSUE ON "LINKING
LAND AND UNDERWATER CULTURAL
HERITAGE MANAGEMENT TO
TECHNOLOGY IN SMART CITIES AND
COMMUNITIES"**

Dear colleagues,

I am pleased to announce the CALL FOR ABSTRACTS for a Special Issue (SI) in HERITAGE Journal (<https://www.mdpi.com/journal/heritage>), which is already on track by myself and Prof. **Anastasia Stratigea**, National Technical University of Athens .

The theme of the SI is on **"Linking Land and Underwater Cultural Heritage Management to Technology in Smart Cities and Communities"**.

More information about the rationale and content as well as papers candidate for this SI you can find in the following link:

https://www.mdpi.com/journal/heritage/special_issues/smart_cities_communities

Deadline for full paper submission, to be uploaded in the Heritage Journal, is February 28, 2019.

All papers submitted will undergo a review process, as predicted by the Journal's conditions.

Publication of selected articles for this SI will be free of charge (No Article Processing Charges). For those interested in contributing, please send an abstract of your paper (up to a total of 200 words maximum) to Prof. Anastasia Stratigea (stratige@central.ntua.gr) or myself **until December 23, 2018.**

Kind regards,

Prof. Vasilike (Bessie) Argyropoulos
Dept. of Conservation of Antiquities & Works of Art
University of West Attica - UNIWA
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METALLOGRAPHY AND
MICROSTRUCTURE - A SUMMER SCHOOL
COURSE IN ANCIENT AND HISTORIC
METALS, SUSSEX COAST COLLEGE
CAMPUS, STATION APPROACH, HASTINGS,
EAST SUSSEX, TN34 1BA. MONDAY JULY
15TH - FRIDAY 19TH JULY 2019

This week-long course is designed to introduce or further develop knowledge of the microstructure of ancient metals and the practical application of metallography. Using prepared samples from the most extensive collection of mounted ancient metals in the world, course participants will learn how to sample, mount, polish, etch and interpret microstructural features.

The geographical spread of metals studied during the course encompasses: ancient Greece, Rome, European Bronze Age, Bronze Age China (Warring States to Tang in fact), Africa, Colombia, Peru, Ecuador, England and Ireland. Lectures on a variety of case studies are included. A lecture on the Wealden Iron Industry will be given by Jeremy Hodgkinson.

The location of the course in the centrally located Hastings campus of Sussex Coast College, allows easy access to the course, and Hastings is a popular seaside destination with many cultural attractions including the Jerwood Gallery, Hastings Museum and Art Gallery, the Shipwreck Museum, and magnificent castles in the surrounding country. Fee for course is 450 pounds sterling, 500 euros or 600 US dollars. Early booking is advisable due to the holiday trade in the summer months. There are many Airbnb, bed-and-breakfast choices and hotels in the area.

Booking: for booking up the course in 2019 please send an e-mail to: dascott@ucla.edu

Instructor: Distinguished Professor Emeritus, David A. Scott, is the former head of the Museum Research Laboratory, J. Paul Getty Museum, Malibu. Professor in the Department of Art History, UCLA, and Founding Director of the UCLA/Getty Conservation Programme. His 2002 book, *Copper and Bronze in Art: Corrosion, Conservation, Colourants*, won the award for the best Art/Scholarly book published in the USA in 2002. His latest book is *Art: Authenticity, Restoration, Forgery*, published in 2016. Professor Scott is the author of over 135 peer-reviewed papers and nine books.

VIRTUAL RECONSTRUCTION OF ARCHAEOLOGICAL SITES USING GIS, MARCH 18TH-22ND, 2019, CRETE (GREECE), PALAEOLOGY AND ARCHAEOLOGY

Course Overview

Any archaeological excavation necessitates the destruction of the site where it operates, eliminating the stratigraphical record in the process, and thus the possibility to review the archaeological context. This course focuses on methodologies on how to reduce that damage, while also providing new tools for archaeological research and dissemination.

The course teaches participants how to employ **3D virtualization** for **archaeological sites**. Participants will learn how to apply **GIS technology** and operate different relevant 3D software (e.g. **OpenJUMP, QGIS, GvSIG, Meshlab and Paraview**).

The course aims to equip participants with the skills to employ and adapt virtual reconstruction methodologies to their own needs. To facilitate this aim, the course includes **practical sessions** working with concrete issues to provide first-hand experience in real-life cases.

Please visit the site: <https://www.transmittingscience.org/courses/palaeontology-and-archaeology/virtual-reconstruction-archaeological-sites-using-gis/?fbclid=IwAR0zStIgbpLZyy0K-CjHl5X6KnxA5V9daVJcljT1KeVVCsFqXmcyt-eNlqA>

**SPECIAL ISSUE ON “ANCIENT
MEDITERRANEAN ISOTOPIC STUDIES” AT
JOURNAL OF ARCHAEOLOGICAL
SCIENCE: REPORTS**

Dear colleagues and friends,

I would like to inform you that article contributions are welcomed to the special issue “Ancient Mediterranean isotopic studies” to be published at Journal of Archaeological Science: Reports planned for release in 2019.

Isotopic methods are increasingly being applied to support archaeological research. However, comparatively few isotopic studies have been undertaken for certain historical periods and regions. This is the case of the ancient Mediterranean where the use of isotopic proxies has the great potential to offer diverse historical information in addition to that obtained using traditional archaeological methods or through the analysis of written sources.

The goal of the special issue “Ancient Mediterranean isotopic studies” is to compile a series of relevant cases studies that illustrate a variety of applications of isotopic methods to the study of the ancient Mediterranean from the Bronze Age to the Byzantine period. This includes, but is not limited to: studies of human diet, mobility and nutrition; assessment of animal and crop management practices; climatic and environmental reconstructions; and provenance of artefacts and raw materials.

The submission deadline is the 31st of March of 2019 and details on the online submission process will be provided soon. Articles accepted following a rigorous peer review process will be made available online ahead of the issue release.

Those interested in submitting an article should express their interest to the guest editors Ricardo Fernandes (fernandes@shh.mpg.de & ricardo.fernandes@arch.ox.ac.uk) and Kevin Salesse (ksalesse@ulb.ac.be).

Best wishes,

Ricardo & Kevin

Dr Ricardo Fernandes

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ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

GODS AND ROBOTS: MYTHS, MACHINES, AND ANCIENT DREAMS OF TECHNOLOGY, BY ADRIENNE MAYOR

Princeton University Press, pp.304, \$20.04

The ancient Greeks would have loved Alexa Gods and Robots: Myths, Machines, and Ancient Dreams of Technology by Adrienne Mayor reviewed Peter Stothard

Among the myths of Ancient Greece the Cyclops has become forever famous, the Talos not so much. While both were monsters who hurled giant boulders at Mediterranean shipping, the Cyclops, who attacked Odysseus on his way home from Troy was a monster like us, the son of a god, an eater, a drinker, a sub-human with feelings. The Talos was more alien, by some accounts a mere machine, manufactured in metal by a god and pre-programmed only to sink ships and roast invaders alive, a cross between a Cruise missile launcher and an automatic oven.

Talos began its existence just as early as the Cyclops. But it was only described with drama in the epic poem the Argonautica, by Apollonius of Rhodes some 500 years later. Homer's readers have always been the more numerous. Only a few fans now read how Jason's Argonauts overcame Talos with the help of the princess Medea, using thought-rays and her knowledge of Talos's one weak mechanical spot.

In Gods and Robots, Adrienne Mayor, an American historian best known for her work on Amazons, aims to rescue the neglected automata of antiquity from the fleshy allure of goddesses and nymphs. For anyone probing the history of biotechnology and artificial intelligence, she suggests that Talos, defender of Crete for the famed King Minos, should be the star of Chapter One.

Mythic Crete is for Mayor a Silicon Valley of the very ancient world, home of the cryptic maze, the first manned flight (of Daedalus and doomed Icarus, his son), the first self-guided arrows. She selects the most bronze of the Bronze Age, from Talos clanking around the Cretan coast to the mindless robot army which, again with the help of Medea, Jason had to overcome to win the Golden Fleece.

This is an excellent source book for confronting political and technological hubris then and now, the earliest arguable traces of modern fears. Minos, she notes, was a peculiarly brutal autocrat, belonging to a class of men that she claims is especially associated with biotechnology and its abuse. He did not trust his queen, the witch Pasiphae, who made him ejaculate scorpions and snakes if he advanced on another woman. Pasiphae herself preferred sex with a bull, and engaged Cretan high-tech to provide a cow-shaped cage in which to crouch on her hands and knees, plus the farmyard smells for romantic atmosphere and the obstetrics necessary for the birth of a Minotaur.

Mayor's second big robot star is Pandora, the mechanical vehicle by which Zeus brought humanity all its sorrows, packed up in a pot which, by mistranslation, came later to be known as a box. Pandora is not a woman but a cunningly constructed trap which has 'no parents, no childhood, no past, no memories, no emotional depth and no self-identity or soul'. This product of the Mount Olympus automaton industry is like Homer's self-opening gates for the gods' chariots and the golden tripods which travelled from table to table delivering divine drinks. Automatic control can become no control at all.

Mayor links the past and present of genetic manipulation, comparing Medea's rejuvenation of an old ram by blood transfusion with the cloning of Dolly the Sheep. She notes how Pygmalion's statue, Galatea, poses issues about dolls sold for sex. For every hope there was and is a fear. In some versions of the Pandora story Hope is a character in itself, the one gift of the gods which did not escape from Zeus's pot.

This is much disputed territory. Did the Greeks have hopes and fears of technology before they had the technology itself? Many think not.

Mayor thinks otherwise. Some sections of her book are vigorous seminar arguments with classicists and historians of science. Others make a dazzling stream of less connected subjects, allowing her to describe not only evidence of religious belief but automata that were amazing theatrical techniques, not just Pandora but the pecking eagles and libation-pouring statues that entertained the crowds when Apollonius was in Alexandria.

Did these machines inspire the poets or did the poets open the minds of the inventors? The very novelty of mechanical men and birds may have encouraged poets to interpret myths as technological when they could. Talos itself became more mechanical as time moved on. The details of the oil-tube between its neck and ankle and the vulnerable bronze plug that keeps the machine at work comes from 500 years after the writing of the *Argonautica*.

Could a mechanical android ever have a moral sense? Can it have one now? Where is the line? When Edmund Spenser wanted to introduce such questions in *The Faerie Queene* he created his own unbending, iron-man instrument of justice and called it Talus.

Please visit the site: <https://spectator.us/robots-ancient-greeks-loved-alex/>

THE IMPACT OF ENVIRONMENTAL CHANGE ON PALAEOOLITHIC AND MESOLITHIC PLANT USE AND THE TRANSITION TO AGRICULTURE AT FRANCHTHI CAVE, GREECE

Eleni Asouti, Maria Ntinou and Ceren Kabukcu,
<https://doi.org/10.1371/journal.pone.0207805>

Abstract

The multi-period (~38,000–6000 cal BP) site of Franchthi Cave, located in the Argolid peninsula of southern mainland Greece, is unique in the Eastern Mediterranean for preserving a long archaeological sequence extending from the Upper Palaeolithic through to the end of the Neolithic period. In this paper, we present new anthracological (carbonized fuel wood waste) evidence from Franchthi Cave with which we reconstruct the changing ecology of woodland vegetation in its environs during the late Pleistocene and the early-mid Holocene. The integrated archaeobotanical record (charred wood and non-wood macro-remains) demonstrates that in the Lateglacial the now-submerged coastal shelf of the southern Argolid peninsula was covered by steppe grassland vegetation dominated by junipers, almonds, cereals and legumes. The rapid climatic amelioration that marked the start of the Holocene brought about the disappearance of juniper and the expansion of deciduous woodland, cereals and lentils. This woodland-grassland biome bears no analogues in the modern and historical vegetation ecology of the Aegean basin. Instead, it is directly comparable to the steppe woodland biomes exploited by late Pleistocene and early Holocene hunter-gatherers in Southwest Asia, and points to the convergent evolution of late Pleistocene and early Holocene plant exploitation strategies between the two regions. Continuous sea-level rise during the early Holocene led to the gradual extinction of this unique palaeohabitat, which acted as the catalyst for the selective introduction of domesticated cereal crops at Franchthi Cave in the early 9th millennium cal BP. Our meta-analysis of the non-wood archaeobotanical data puts into question the concept of the wholesale introduction of a crop “package” by pioneer settler groups arriving from the East. It is proposed instead that selective cereal crop introduction formed part of a complex pattern of sociocultural interactions that brought together indigenous and immigrant groups into new communities.

Please visit the site:

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0207805>

EΙΔΗΣΕΙΣ - NEWS RELEASE

IT'S TRUE: ANCIENT GAULS EMBALMED THE SEVERED HEADS OF THEIR ENEMIES - CHEMICAL ANALYSIS SHOWS THAT ANCIENT ACCOUNTS OF THE WARRIORS PRESERVING HEADS USING PINE RESIN ARE ACCURATE, BY JASON DALEY

There's a built-in advantage to portraying your enemies as bigger and fiercer than they really are. If you defeat them, it means you beat 7-foot-tall, bloodthirsty monsters. If you lose, well, hey, who can defeat 7-foot-tall, bloodthirsty monsters, anyway? While the technique is great for self-aggrandizement, it makes it difficult for historians to decide what is true and what is not.

Case in point: how Greek and Roman historians portrayed the ancient Celtic Gauls, a group of various tribes that occupied modern France and western Europe during the Iron Age. Researchers were never sure whether they should trust classical texts that portrayed the Gauls as fierce warriors who liked to lop off their enemies' heads, embalm them, then carry them around on the necks of their horses. In this case, however, as Nicola Davis at The Guardian reports, new archaeological work indicates the stories of the gruesome necklaces are probably true.

Archaeologists recently tested 11 skulls that showed signs they had been decapitated, and had their brains removed, along with samples of five animal bones found at a Gallic site in Le Cailar in the south of France.

Along with finding fats and cholesterol deposits on all the bones, which are expected residues from decomposition, the chemical analysis of the samples revealed six of the human skulls also contained diterpenoids, signs that the skulls had come in contact with some sort of conifer resin. The finding gives credence to available historical accounts. According to Michelle Starr at ScienceAlert, ancient Greek historian Diodorus Siculus wrote that the Gauls were known to lop off the heads of their enemies and then preserve them in a mixture including cedar oil. Roman historian Strabo repeated the account, noting the Gauls preserved the heads of notable enemies and did not return them no matter how much gold they were offered.

As Davis at The Guardian reports, despite the ancient reports that cedar oil was used, the resin was likely a different type of pine, since cedars were not common in southern France at the time.

So why did the Gauls try to embalm the heads instead of just displaying skulls like so many other cultures? Réjane Roure of Paul Valéry University of Montpellier and co-author of the study, which is published in the Journal of Archaeological Science, tells

Davis of the Guardian that they probably wanted others to recognize the people they had defeated. “The ancient texts said only the most powerful enemies and the most important enemies were embalmed – maybe that was to be able to say ‘see that face, it was some big warrior,’” she says.

The finding is exciting for archaeologists. “We knew from statues that the display of human heads was popular in Mediterranean France – akin to a broader tradition at this time involving the display of weapons.

The evidence now, from this site, is that human heads were indeed embalmed,” Rachel Pope of the University of Liverpool, not involved in the study, says. “Now we have the science that supports earlier archaeology, as well as a greater understanding of where the classical texts and the archaeology meet.”

As Ruth Schuster at Haaretz contextualizes, the Gauls didn’t invent decapitation. People were lopping off one another’s heads since the dawn of civilization, and the practice continues today by extremists around the world.

Though the Gauls lived for centuries in much of Europe, most of what we know about them comes from their enemies, the Romans, who considered the Gauls living on the borders of their empire as savage antagonists. In 391 B.C., during the time of the Roman Republic, the Gauls sacked the city, creating a general hatred for the Celts that lasted for centuries. That’s one reason Julius Caesar’s campaign to subjugate the Gauls, which began in 58 B.C., was so popular. While Caesar’s war, which was ultimately successful, was supported by the people, many in the Roman Senate decried his brutal tactics and seeming lust for power, with some even suggesting he should be handed over to the enemy. This new research suggests that had those threats materialized, the Gauls would have received him in earnest, taking great care to preserve that very important balding head.

Please visit the site: <https://www.smithsonianmag.com/smart-news/its-true-ancient-gauls-embalmed-severed-heads-their-enemies-180970762/>

ANCIENT EGYPTIANS DISCOVERED ALGOL'S VARIABILITY 3,000 YEARS BEFORE WESTERN ASTRONOMERS

An ancient Egyptian papyrus, known as the Cairo Calendar, could be the oldest historical record of a star's brightness, providing a new perspective on the development of the Algol triple star system over thousands of years.

Known as the Calendar of Lucky and Unlucky Days, the Cairo Calendar, dated from 1244 – 1163 BC, assigns predictions and prognoses to every day of the Egyptian year. These prognoses indicate whether the day, or part of the day, is considered "good" or "bad". The calendar also contains information regarding the day's astronomical observations, such as the behaviour of astronomical objects, especially Algol.

Now researchers say that the astronomical symbolism discovered in the two most Ancient Egyptian myths suggest similar clues could be found in other ancient Egyptian texts.

The article, "Algol as Horus in the Cairo Calendar: the possible means and the motives of the observations," by Sebastian Porceddu, Lauri Jetsu, Tapio Markkanen, Joonas Lyytinen, Perttu Kajatkari, Jyri Lehtinen, and Jaana Toivari-Viitala published in De Gruyter's journal Open Astronomy, looks at how the legends of the Egyptian deities Horus and Set were used in the calendar. The deities describe the behavior of astronomical objects, specifically, the naked eye observations of the variable three-star system Algol.

However, next to nothing is known about who recorded Algol's period into the Cairo Calendar, nor how. The authors show how the ancient Egyptian scribes present celestial phenomena as the activity of gods, which reveals why Algol received the title of Horus.

The study presents ten arguments which show that the ancient Egyptian scribes, known as the "hour-watchers" had the possible means and motives to record the period of Algol in the Cairo Calendar.

"The discovery of Algol's variability would have to be dated to thousands of years earlier than has been previously known. The star would have been a part of ancient Egyptian mythology as a form of the god Horus," said study author Sebastian Porceddu from the University of Helsinki.

Explore further: Ancient Egyptians described Algol's eclipses:
<https://phys.org/news/2015-12-ancient-egyptians-argol-eclipses.html>

More information: Sebastian Porceddu et al. Algol as Horus in the Cairo Calendar: The Possible Means and the Motives of the Observations, Open Astronomy (2018). DOI: 10.1515/astro-2018-0033

Please visit the site: <https://phys.org/news/2018-11-ancient-egyptians-argol-variability-years.html>

RUSSIAN ARCHAEOLOGISTS UNEARTHED ANCIENT GREEK SETTLEMENT IN CRIMEA PENINSULA

Researchers from the Russian Academy of Sciences Archaeological Institute found a previously unknown ancient Greek settlement in eastern Crimea on Friday, a TASS report notes.

Chairman of the State Committee for the Protection of Cultural Heritage of the Republic of Crimea Sergey Yefimov, told the Russian news agency “Researchers from the RAS Institute of Archeology uncovered a new ancient Greek settlement during their excavation near Kerch, which, preliminarily, dates back to the 4th-3rd century BC, a period when the Bosporan Kingdom was flourishing. This is an important finding not just for Crimea but for all of Russia,” he added, pointing out that the discovery was made yesterday.

Yefimov further clarified that the community, called Manitra, occupied an area of about 5,000 square meters. The outpost consists of an estate-like residential area and a domestic zone, made up of livestock pens and middens.

He also revealed that a necropolis was found near the settlement, which hadn’t been looted, meaning there might be important findings to be made there.

Please visit the site: <http://www.tornosnews.gr/en/greek-news/culture/33320-russian-archaeologists-unearthed-ancient-greek-settlement-in-crimea-peninsula.html>

A LOST ANCIENT CITY BUILT BY TROJAN WAR CAPTIVES HAS BEEN FOUND, GREEK OFFICIALS SAY, BY AMY B WANG

Mention the Trojan War, and what may first come to mind is the oft-told tale of Helen, wife of Sparta's King Menelaus and possessor of a divinely bestowed beauty, falling in love with Paris of Troy.

Their supposed affair and her subsequent abduction from Sparta sparked a 10-year Greek siege of Troy that would shape Greek civilization for centuries to come — at least according to Greek mythology.

Now fast-forward about three millennia.

For the past several years, archaeologist Elena Korka has been focused on a far less romantic but more concrete legacy of the Trojan War: A lost city named Tenea, reportedly settled by war prisoners brought over from Troy.

Tenea enjoyed an ideal location to the south of the bustling ancient port of Corinth, on the narrow strip of land connecting Greece's mainland and its Peloponnesian peninsula. Against the odds, the city of outsiders "prospered more than the other settlements, and finally even had a government of its own," the Greek philosopher Strabo once wrote.

As legend has it, when the Romans invaded Corinth in 146 B.C. — ultimately destroying the city and beginning their takeover of Greece — Tenea was left unharmed. Still, even Tenea eventually crumbled and disappeared, shadowed in the history books by more consequential ancient metropolises.

For decades, very periodic archaeological finds teased modern-day scholars with evidence of Tenea's existence: An exquisite marble statue of a young man, known as the Kouros of Tenea, was discovered in 1846, just south of Corinth. A sarcophagus containing the skeletal remains of what had been a high-society woman was unearthed in 1984, where Tenea was thought to have stood.

In 2013, Korka and a team surveyed a site in the area and, encouraged by pottery and other small finds, began excavating.

"The concentration of ceramics and architectural remains ... were the reasons that led us to the excavation of the site," Korka said in a guest lecture at New York University last year. "Our ultimate goal was not just the unearthing of [an ancient theater purported to be there] but rather the discovery of evidence which would help us to find remains of the settlement of ancient Tenea."

The excavation produced some extraordinary artifacts. Last year, the Greek Culture Ministry announced that the team had found a trove of riches while digging up what had been a dual-chambered burial ground at the Tenea site, as Newsweek reported:

Five of the most well-appointed tombs, the experts said, would have belonged to wealthy inhabitants of Roman Greece. Bodies were found alongside elaborate gilded bronze leaves, a golden ring, precious stones and gold and bronze coins from the surrounding region.

Among the other ritualistic items buried with the dead were perfumes, artifacts made of gold, gold foil and elaborately crafted glassware, as well as items of pottery.

Also within the dig site, the archaeologists recovered items from a series of different burial plots. Fourteen graves, organized in circles, as was Roman convention, yielded a number of gold and silver coins, vases and a series of lamps, the most striking of which bore depictions of the Roman goddess Venus and two cupids.

Still, real and tangible proof of Tenea as a settlement — structures beyond graves and gemstones and coins — eluded archaeologists. Until now.

On Tuesday, the Greek Culture Ministry announced Korca's team had found "proof of the existence of the ancient city" of Tenea. An image of the excavation site released by the ministry depicts stone walls, the remains of what were probably houses from the settlement nearly 3,000 years ago.

Korca, now Greece's director of antiquities and cultural heritage, told the Associated Press the team had identified distinctive door openings, walls and floors, and had unearthed additional pottery spanning the 4th century B.C. to late Roman times.

The discovery is yet more evidence of Tenea's unique position as a bridge between Greek and Roman cultures.

"The city of Tenea presents a tantalizing fragment from the long history of ancient Corinth and testifies to the supreme artistic achievements of the Greco-Roman civilization," Korca wrote for NYU last year. "Its remains and findings served many purposes, one of which was to create spaces that could be read simultaneously according to Greek and Roman cultural codes, spaces where seeing both would eventually make sense."

Please visit the site: <https://www.washingtonpost.com/history/2018/11/13/lost-ancient-city-built-by-trojan-war-captives-has-been-found-greek-officials-say/>

POLISH ARCHAEOLOGISTS UNCOVER OLDEST TEMPLE IN PERSIAN GULF REGION

A Polish-Kuwaiti team of archaeologists have unearthed a 7,000-year-old temple, the oldest in the Persian Gulf region, according to a report.

Other places of worship found in the area were erected at least 2,500 years later.

The discovery was made at a pre-historic settlement dating back to 6,000 BC, located at northern Kuwait's Al-Subijah desert. The temple was found among numerous houses stretching for 200 metres.

The group uncovered the remains of an ash-filled hearth, excavation manager Professor Piotr Bieliński from the Center of Mediterranean Archeology at the University of Warsaw told PAP.

Bieliński said the temple displayed the influences of the Ubaid culture of ancient Mesopotamia. He added: "The newly discovered building is very similar to another site known by archaeologists as the Eridu temple, situated in southern Mesopotamia," where the Ubaid culture was widespread, PAP reported.

In another finding, the team unearthed the fragments of a square -- an Ubaid site unlike any found in Mesopotamia -- located at the heart of the early settlement.

Please visit the site: <http://www.thenews.pl/1/11/Artykul/391501,Polish-archaeologists-uncover-oldest-temple-in-Persian-Gulf-region>

EGYPT CAT MUMMIES DISCOVERED IN ANCIENT TOMBS

Archaeologists reveal mummified cats and scarab beetles found in recently discovered tombs near Cairo.

Archaeologists in Egypt have discovered a collection of mummified cats and scarab beetles in a series of ancient tombs.

The finds, dating back more than 4,000 years, were made at Saqqara, south of Cairo. The vast burial ground served the city of Memphis - ancient Egypt's capital for 2,000 years.

Ancient Egyptians believed cats, and other animals, held a special position in the afterlife.

One of the tombs held a bronze statue dedicated to a cat goddess.

Scarabs also held religious significance and could symbolise the sun god, Ra. Mostafa Waziri, of Egypt's antiquities council, said the discovery of mummified scarabs was "something really a bit rare".

Humans were mummified to preserve their bodies for the afterlife, while animals were mummified as religious offerings.

In all, seven sarcophagi were discovered on the edge of the King Userkaf pyramid complex. Three of them held cats.

Further work at the site in Saqqara is planned. Archaeologists found the door to another tomb that remains sealed and they plan to open it in the coming weeks.

The newly found tombs lie in a buried ridge that has only partially been excavated. Experts say it could offer many more discoveries.

Please visit the site: <https://www.bbc.com/news/world-middle-east-46167334> [Go there for many pix]

ANCIENT ENGRAVINGS OF SHIPS AND ANIMALS UNCOVERED IN BEERSHEBA - EXCAVATORS DISCOVERED LARGE CISTERN WHILE PREPARING FOR A NEW NEIGHBORHOOD, BY TAMARA ZIEVE

Excavators uncovered ancient engravings of ships and animals while clearing the way for a new neighborhood in Beersheba, the Israel Antiquities Authority announced Wednesday.

The engravings were found on the walls of a large, Roman-era water cistern, with a 5 to 5.5m. circumference and a depth of 12 m. An initial clearing of what at first appeared to be a large depression exposed a well-hewn and plastered staircase leading into the depth of the cistern.

In the plaster covering the cistern walls, the excavators, Dr. Davida Eisenberg-Degen and Avishay Levi-Hevroni of the authority, spotted thinly engraved lines. Though many of the lines have become less visible over time, they could make out the depictions of boats, a sailor and animals. Thirteen ships were engraved in the plaster of the cistern walls.

According to Eisenberg-Degen, a specialist in rock art and graffiti at the authority, the ships include technical details and present proportions which suggest that the artist was knowledgeable in ship construction.

“The shape and form of the cistern [and] the technique of hewing and plastering suggest that the cistern is of the first-second century CE, and likely served the residents of a Roman-period site situated some 800 m. away, recently excavated by Dr. Fabian and Dr. Cohen-Sason of Ben-Gurion University of the Negev,” Eisenberg-Degen said.

Though the cistern was found filled with sediments, it is apparent that it was maintained, cleaned and in use until recently, the authority said.

The sediment fill included a number of ceramic shards, ammunition shells and parts of weapons that the authority said date back to World War I.

The Antiquities Authority and the “Umbrella Agreement and Development of New Neighborhoods in Beersheba” will preserve the cistern and incorporate it into the future public green space of the new neighborhood, which will be called Rakafot.

“There are all sorts of plans about how to make it accessible to the public,” said Eisenberg-Degen. “This is an almost direct communication with the thoughts of a person who was in this place 2,000 years ago, and this is what he chose to decorate the walls with.”

Please visit the site: <https://www.jpost.com/Israel-News/Ancient-engravings-of-ships-and-animals-uncovered-in-Beersheba-571282> Go there for pix and video]

THIS 4,500-YEAR-OLD RAMP CONTRAPTION MAY HAVE BEEN USED TO BUILD EGYPT'S GREAT PYRAMID, BY OWEN JARUS

Archaeologists have long wondered exactly how the ancient Egyptians constructed the world's biggest pyramid, the Great Pyramid. Now, they may have discovered the system used to haul massive stone blocks into place some 4,500 years ago.

They discovered the remains of this system at the site of Hatnub, an ancient quarry in the Eastern Desert of Egypt. The contraption would have been used to transport heavy alabaster stones up a steep ramp, according to the archaeologists working at the site, from the Institut français d'archéologie orientale (French Institute for Oriental Archaeology) in Cairo and from the University of Liverpool in England.

And it was possibly how Egyptians built the Great Pyramid, in the name of the pharaoh Khufu. [In Photos: Inside Egypt's Great Pyramids]

"This system is composed of a central ramp flanked by two staircases with numerous post holes," Yannis Gourdon, co-director of the joint mission at Hatnub, told Live Science. "Using a sled which carried a stone block and was attached with ropes to these wooden posts, ancient Egyptians were able to pull up the alabaster blocks out of the quarry on very steep slopes of 20 percent or more."

The ropes attached to the sled acted as a "force multiplier," making it easier to pull the sled up the ramp, said Roland Enmarch, the other co-director of the Hatnub mission.

"This kind of system has never been discovered anywhere else," Gourdon said. "The study of the tool marks and the presence of two [of] Khufu's inscriptions led us to the conclusion that this system dates back at least to Khufu's reign, the builder of the Great Pyramid in Giza," he added.

"As this system dates back at least to Khufu's reign, that means that during the time of Khufu, ancient Egyptians knew how to move huge blocks of stone using very steep slopes. Therefore, they could have used it for the construction [of] his pyramid," Gourdon said.

The Great Pyramid is the largest of the three Giza Pyramids, built for each of three pharaohs —Khufu, Khafre and Menkaure. Khufu's is the largest pyramid ever constructed in Egypt, standing 481 feet (146 m) tall when it was first built. It was considered a wonder of the world by ancient writers.

While archaeologists generally agree that workers at this pyramid used a ramp system to move stone blocks up the pyramid, how exactly this system worked has been a long-standing mystery, one which this discovery may help solve.

Please visit the site: <https://www.livescience.com/63978-great-pyramid-ramp-discovered.html>

AN EXPLODING METEOR MAY HAVE WIPED OUT ANCIENT DEAD SEA COMMUNITIES - ARCHAEOLOGISTS AT A SITE IN WHAT'S NOW JORDAN HAVE FOUND EVIDENCE OF A COSMIC CALAMITY, BY BRUCE BOWER

A superheated blast from the skies obliterated cities and farming settlements north of the Dead Sea around 3,700 years ago, preliminary findings suggest.

Radiocarbon dating and unearthed minerals that instantly crystallized at high temperatures indicate that a massive airburst caused by a meteor that exploded in the atmosphere instantaneously destroyed civilization in a 25-kilometer-wide circular plain called Middle Ghor, said archaeologist Phillip Silvia. The event also pushed a bubbling brine of Dead Sea salts over once-fertile farm land, Silvia and his colleagues suspect.

People did not return to the region for 600 to 700 years, said Silvia, of Trinity Southwest University in Albuquerque. He reported these findings at the annual meeting of the American Schools of Oriental Research on November 17.

Excavations at five large Middle Ghor sites, in what's now Jordan, indicate that all were continuously occupied for at least 2,500 years until a sudden, collective collapse toward the end of the Bronze Age.

Ground surveys have located 120 additional, smaller settlements in the region that the researchers suspect were also exposed to extreme, collapse-inducing heat and wind. An estimated 40,000 to 65,000 people inhabited Middle Ghor when the cosmic calamity hit, Silvia said.

The most comprehensive evidence of destruction caused by a low-altitude meteor explosion comes from the Bronze Age city of Tall el-Hammam, where a team that includes Silvia has been excavating for the last 13 years. Radiocarbon dating indicates that the mud-brick walls of nearly all structures suddenly disappeared around 3,700 years ago, leaving only stone foundations.

What's more, the outer layers of many pieces of pottery from same time period show signs of having melted into glass. Zircon crystals in those glassy coats formed within one second at extremely high temperatures, perhaps as hot as the surface of the sun, Silvia said.

High-force winds created tiny, spherical mineral grains that apparently rained down on Tall el-Hammam, he said. The research team has identified these minuscule bits of rock on pottery fragments at the site.

Examples exist of exploding space rocks that have wreaked havoc on Earth (SN: 5/13/17, p. 12). An apparent meteor blast over a sparsely populated Siberian region in 1908,

known as the Tunguska event, killed no one but flattened 2,000 square kilometers of forest. And a meteor explosion over Chelyabinsk, Russia, in 2013 injured more than 1,600 people, mainly due to broken glass from windows that were blown out.

Citations

P.J. Silvia et al. The 3.7kaBP Middle Ghor event: catastrophic termination of a Bronze Age civilization. American Schools of Oriental Research annual meeting, Denver, November 17, 2018.

Further Reading

T. Sumner. Here's how an asteroid impact would kill you. Science News. Vol. 191, May 13, 2017, p. 12.

Please visit the site: <https://www.sciencenews.org/article/exploding-meteor-may-have-wiped-out-ancient-dead-sea-communities>

ANCIENT EROTIC FRESCO UNCOVERED IN POMPEII

This ancient fresco, depicting an erotic scene from the Greek myth "Leda and the Swan," has been uncovered at the Pompeii archaeological site in central Italy.

Please visit the site: <https://edition.cnn.com/videos/arts/2018/11/20/fresco-erotic-leda-swan-pompeii-lon-orig-gb.cnn> [Go there for video]

A BRONZE AGE TOMB IN ISRAEL REVEALS THE EARLIEST KNOWN USE OF VANILLA - JUGS THAT DATE TO ABOUT 3,600 YEARS AGO HOLD TRACES OF THE AROMATIC SUBSTANCE, BY BRUCE BOWER

Although long considered a product that originated in ancient Mexico, vanilla — which is extracted from beans such as these — was used by Middle Easterners around 3,600 years ago, a new study finds.

Three jugs placed as offerings in a roughly 3,600-year-old tomb in Israel have revealed a sweet surprise — evidence of the oldest known use of vanilla.

Until now, vanilla was thought to have originated in Mexico, perhaps 1,000 years ago or more. But jugs from the Bronze Age site of Megiddo contain remnants of two major chemical compounds in natural vanilla extract, vanillin and 4-hydroxybenzaldehyde, said archaeologist Vanessa Linares of Tel Aviv University in Israel. Chemical analyses also uncovered residues of plant oils, including a component of olive oil, in the three jugs.

“Bronze Age people at Megiddo may have used vanillin-infused oils as additives for foods and medicines, for ritual purposes or possibly even in the embalming of the dead,” Linares said. She described these findings at the annual meeting of American Schools of Oriental Research on November 16.

Vanillin comes from beans in vanilla orchids. About 110 species of these flowers are found in tropical areas around the world. The chemical profile of the vanillin in the Megiddo jugs best matches present-day orchid species in East Africa, India and Indonesia, Linares said.

Extensive Bronze Age trade routes likely brought vanillin to the Middle East from India and perhaps also from East Africa, she suggested.

“It’s really not surprising that vanillin reached Bronze Age Megiddo given all the trade that occurred between the [Middle East] and South Asia,” says archaeologist Eric Cline of George Washington University in Washington, D.C. But no evidence exists of trade at that time between Middle Eastern societies and East Africa, says Cline, who did not participate in the Megiddo research.

Vanilla orchids or their beans probably reached Megiddo via trade routes that first passed through Mesopotamian society in southwest Asia. However Bronze Age Middle Easterners ended up with those products, discoveries at Megiddo challenge the idea that vanilla use originated only in Mexico and then spread elsewhere, Cline says.

The vanillin-containing jugs at Megiddo came from a tomb of three “highly elite” individuals who were interred with six other people of lesser social rank, said archaeologist Melissa Cradic of the University of California, Berkeley, a member of the

current Megiddo research team. Excavations uncovered the tomb in 2016, Cradic also reported at the ASOR meeting.

Primary burials in the tomb consist of an adult female, an adult male and an 8- to 12-year-old boy. Elaborate types of bronze, gold and silver jewelry were found on and around the three skeletons. Exact replicas of several pieces of jewelry appeared on each individual.

The tomb lies in an exclusive part of Megiddo near a palace and a monumental city gate.

“We can’t definitively say that these three people were royals,” Cradic said. “But they were elites in Megiddo and may have belonged to the same family.”

Please visit the site: <https://www.sciencenews.org/article/bronze-age-tomb-israel-reveals-earliest-known-use-vanilla> [Go there for pix]

9,000-YEAR-OLD MASK FROM HEBRON HILLS SHEDS LIGHT ON THE DAWN OF AGRICULTURE

Extremely rare find, recovered from thieves, was likely part of the ancestor-worship of humans at the start of the transformation away from a nomadic lifestyle By Toi Staff

Archaeologists have recovered from thieves a unique stone mask dating back some 9,000 years, the Israel Antiquities Authority announced on Wednesday. It is one of only 15 in the world.

Officials investigating the theft were able to trace the mask's origins to a precise location in the Pnei Hever area of the southern Har Hebron region in the southern West Bank. The site, along with the mask's features, helped scientists to date it with considerable confidence.

The mask was discovered, in early 2018, in the hands of antiquities thieves by the Archaeology Department of the Defense Ministry's Civil Administration in the West Bank, the IAA said. No further details were given about the theft or the subsequent recovery.

The mask is made of pinkish-yellow limestone, and may have been worn by living people as part of rituals surrounding ancestor worship, according to the IAA's Ronit Lupu.

"Discovering a mask made of stone, at such a high level of finish, is very exciting. The stone has been completely smoothed over and the features are perfect and symmetrical, even delineating cheek bones. It has an impressive nose and a mouth with distinct teeth," Lupu said.

Archaeologists believe it was meant to be worn or attached to an artifact for display, because it has four holes drilled into its edges to enable it to be tied.

Its smooth finish was achieved by painstaking work with the stone tools of the Neolithic or "new stone" age.

Only 15 such masks have ever been found anywhere in the world, and just two have a usable provenance — that is, archaeologists know where they were found and can therefore place them with relative confidence in the context of a period and place.

The remaining 13 "are in private collections throughout the world, which makes it more difficult to study them," the IAA announcement lamented.

A 9,000-year-old ritual mask discovered in the southern Hebron Hills area of the West Bank in early 2018. (Antiquities Theft Prevention Unit, Israel Antiquities Authority)

The mask will shed new light on a time of profound transformation, as humans were moving from a hunter-gatherer lifestyle to permanent settlement and systematic agriculture, a shift that led to the rise of the first cities and, eventually, the first complex states and writing.

“Stone masks are linked to the agricultural revolution,” according to Omry Barzilai, head of the IAA Archaeological Research Department.

“The transition from an economy based on hunting and gathering to ancient agriculture and domestication of plants and animals was accompanied by a change in social structure and a sharp increase in ritual-religious activities. Ritual findings from that period include human shaped figurines, plastered skulls, and stone masks.”

This was a time of ancestor worship, explained Lupu, and of an artistic culture that seemed focused on human faces.

“It was part of the ritual and retention of family heritage that was accepted at the time. For example, we find skulls buried under the floors of domestic houses, as well as various methods of shaping and caring for the skulls of the dead,” Lupu said. “This led to plastering skulls, shaping facial features, and even inserting shells for eyes.

Stone masks, such as the one from Pnei Hever, are similar in size to the human face, which is why scholars tend to connect them with such worship.”

Side view of a 9,000-year-old stone mask discovered in the southern Hebron Hills area of the West Bank in early 2018. (Clara Amit, Israel Antiquities Authority)

Lupu explained that not only the mask’s discovery, but also knowledge of its provenance, made it a rare find.

“The mask is a unique finding in the archaeological world. It is even more unusual that we know which site it came from. The fact that we have information regarding the specific place in which it was discovered makes this mask more important than most other masks from this period that we currently know of,” Lupu said.

The southern Hebron Hills area has been the source of other masks dated to the same time, known to specialists as the Pre-Pottery Neolithic B period. Its discovery thus bolsters the prevailing belief among archaeologists that this area served as a key center for the production of such masks, “and most likely also for ritual activities” associated with them, the statement said.

Initial conclusions from the study of the mask by scientists at the Israel Antiquities Authority and the Geological Survey of Israel are to be presented Thursday at the annual meeting of the Israel Prehistoric Society at the Israel Museum in Jerusalem.

Please visit the site: <https://www.timesofisrael.com/9000-year-old-mask-from-hebron-hills-sheds-light-on-the-dawn-of-agriculture/> [Go there for pix]

A BRONZE AGE GAME CALLED 58 HOLES WAS FOUND CHISELED INTO STONE IN AZERBAIJAN - AN ANCIENT DIVERSION TRAVELED FAST FROM THE NEAR EAST TO EURASIA, AN ARCHAEOLOGICAL FIND HINTS, BY BRUCE BOWER

A dotted pattern pecked into stone at a remote Eurasian rock-shelter represents a Bronze Age game that was thought to have existed at that time only in Mesopotamia, Egypt and other Near Eastern regions.

The game is known as 58 holes, or Hounds and Jackals. Archaeologist Walter Crist of the American Museum of Natural History in New York City described his surprising discovery of a roughly 4,000-year-old example of 58 holes in present-day Azerbaijan on November 15 at the annual meeting of the American Schools of Oriental Research.

Azerbaijan sits between the Caucasus Mountains and the Caspian Sea, some 1,000 to 2,000 kilometers from the Near East. “Bronze Age herders in that region must have had contacts with the Near Eastern world,” Crist said. “Ancient games often passed across cultures and acted as a social lubricant.”

While conducting an internet search of publications about 58 holes, Crist saw what looked like an example of the game’s layout in a photograph from a rock-shelter published in an online magazine called Azerbaijan International. He contacted a colleague in the Eurasian nation who helped to arrange a site visit in April 2018.

Once there, Crist found that the site shown in the magazine had been bulldozed for a housing development. But a scientific official in Azerbaijan told him of another rock-shelter with the same dot pattern. Crist, who has studied early Near Eastern versions of 58 holes, recognized the two-person game when he reached that site.

The pattern consists of two central rows of dots and two outer rows of dots that curve in to meet at a slightly larger dot located above the central rows. Dot numbers can vary but usually total 58. Players are thought to have rolled dice to move pebbles or other pieces on each side of the game, each trying to reach the top first. This game might have been a precursor of modern-day backgammon.

Themes and styles of rock art found along with the game in Azerbaijan date to the Bronze Age, Crist says. Techniques to date rock art more precisely have not been used on the finds (SN Online: 11/7/18).

Please visit the site: <https://www.sciencenews.org/article/bronze-age-game-found-chiseled-stone-azerbaijan>