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Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

- Μάρτιος 2020 -

ἄνθρωπος μέτρον, "Man [is] the measure [of all things]", Motto of Protagoras (as quoted in Plato's *Theaetetus* 152a).

Newsletter of the Hellenic Society of Archaeometry

- March 2020 -

Nr. 228

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ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS

15TH INTERNATIONAL ACCELERATOR MASS SPECTROMETRY CONFERENCE, 6- 11TH SEPTEMBER, 2020, SYDNEY, AUSTRALIA

On behalf of the AMS-15 Organizing Committee at ANSTO, I have the pleasure to announce that the website for the 15th International Accelerator Mass Spectrometry Conference to be held from Sunday 6 to Friday 11 of September in Sydney, Australia, is now open for registration and abstract submission.

We look forward to you joining us for a fabulous conference and great holiday in Australia.

Please go to <https://ams15.sydney/>

All the best, and see you in Sydney!

David Fink

AMS-15 Organizing Committee

David Fink (Conference Chairperson), Kelly Cubbin, David Child, Geraldine Jacobsen and Megan Williams

IRUG14 CONFERENCE MAY 27-28-29,
CULTURAL HERITAGE AGENCY OF THE
NETHERLANDS, AMERSFOORT, THE
NETHERLANDS

Dear Colleague,

The Cultural Heritage Agency of the Netherlands (RCE) and The Infrared and Raman Users Group (IRUG) are pleased to announce that registration for the fourteenth IRUG Conference (IRUG14) is now open.

The conference will include oral and poster presentations addressing all aspects of the application of Infrared and Raman spectroscopy for the study, documentation and protection of the world's cultural heritage.

Conference: May 27-29, 2020

Venue: Cultural Heritage Agency of the Netherlands, Amersfoort, The Netherlands

Further information about the provisional program, excursions, accommodation and payment instructions can be found on this [information page](#) and on the [IRUG website](#).

Please address inquiries to: Suzan de Groot, IRUG14@cultureelerfgoed.nl

Looking forward to seeing you in May 2020!

On behalf of the Cultural Heritage Agency of the Netherlands, the IRUG Board of Directors and the organizing committee,

Suzan de Groot

Senior Conservation Scientist
Cultural Heritage Agency

HISTORICAL METALLURGY CONFERENCE **- ACCIDENTAL AND EXPERIMENTAL** **ARCHAEOMETALLURGY 2.0, ANCIENT** **TECHNOLOGY CENTRE, DORSET, JUNE** **2020**

To celebrate the 10th anniversary of the hugely successful experimental conference at West Dean in 2010, and the subsequent volume of the same name, the Historical Metallurgy Society would like to invite submissions for both practical metallurgical experiments and oral presentations to be held over a two-and-a-half-day event at the Ancient Technology Centre, Dorset (<https://ancienttechnologycentre.com/>) in June 2020.

We have an exciting programme of talks, and practical demonstrations and activities for delegates.

Accommodation will be provided on site with the rare opportunity to sleep in a Viking Age longhouse (while places last). There will also be an area to camp close to the activities. There are additional accommodation/pubs and eateries available in the local village. Transport from the train station can also be arranged. A ‘conference dinner’ will be available on-site and from 12pm on the Sunday, our activities will be open to visitors.

The programme is now available online, and registration is now open.

For more details email yc505@york.ac.uk or go to <http://hist-met.org/meetings/experimental-archaeometallurgy-agm.html>

**THE 24TH INTERNATIONAL RADIOCARBON
CONFERENCE, 8-12 MARCH 2021, HOTEL
NEVE ILAN, ISRAEL**

More Information & Accessibility Issues: radiocarbon2021@weizmann.ac.il

The conference is organized by

D-REAMS: Dangoor Research Accelerator Mass Spectrometer Laboratory
Weizmann Institute of Science, Israel

**7TH BALKAN SYMPOSIUM ON
ARCHAEOMETRY (BSA 2020) – “SCIENCE &
HERITAGE”, WEST ATTICA UNIVERSITY,
ATHENS, SEPTEMBER 22-25, 2020**

Dear Colleagues,

You are cordially invited to participate in the forthcoming 7th Balkan Symposium on Archaeometry (BSA 2020) – “Science & Heritage”, to be held in the West Attica University, Athens, on September 22-25, 2020.

The Balkan Symposium on Archaeometry (BSA) was first held in the “Sts Cyril & Methodius” University, Skopje, on September 18-20, 2008, and since then is ordinarily organized on a biennial basis (2010-Istanbul/Turkey, 2012-Bucharest/Romania, 2014-Nessebar/Bulgaria, 2016-Sinaia/Romania, 2018-Ljubljana/Slovenia).

The Balkans is a region where human activity is attested from the dawn of civilization, and interactions between various cultures have been taking place continuously since at least 5000 BCE. Therefore, there is a well-established need for cutting-edge archaeological research and archaeometry/conservation science.

In the broad framework of the interdisciplinary field of archaeometry, applied sciences such as physics and chemistry boost our understanding of the past through the analytical investigation of materials culture, offering thus an invaluable tool in the hands of archaeologists, art historians and conservators. In this view, the BSA aims at bringing together and stimulating the interaction between experts from various scientific fields, including –but not limited to– physics, chemistry, conservation/restoration, archaeology and history of art.

Moreover, the Symposium aims at reinforcing the network between the members of the Balkan archaeometric community, and also at enhancing relevant collaborations.

The 2020 Athens BSA will include the following topics:

- Analytical techniques in cultural heritage materials
- Ceramics, metals, glass, lithics, pigments, organic materials
- Dating Methods & Palaeo-environment
- Absolut Dating methods
- Palaeo-environment Reconstruction
- Geophysical prospection & GIS applications
- Bioarchaeology
- Conservation Science
- Conservation of inorganic and organic materials
- Art conservation
- Degradation mechanisms
- Open Session
- Experimental archaeology

- Computer Sciences in cultural heritage
- Data manipulation and statistics
- 3D scanning/printing in cultural heritage
- Imaging techniques in arts and archaeology

Important dates:

- Abstract Submission: 31/05/2020
- Notification of abstract acceptance: 30/06/2020
- Early bird registration: 15/07/2020
- Conference: September 22-25, 2020.

Further information on abstract submission, registration, social events, accommodation and transportation will be soon available on the Symposium website:
<https://bsa7.uniwa.gr>

Looking forward to seeing you all in Athens.

On behalf of the organizing committee,

Professor Theodore Ganetsos
University of West Attica

CONSERVATION AND PHYSICOCHEMICAL STUDY OF METAL ARTIFACTS



*

Athens – Chalkis , 30 March - 4 April 2020



Partners in this project: Faculty of Archaeology, Leiden University; Ephorate of Antiquities of Euboea (Chalkis); Netherlands Institute at Athens (NIA); Greek Research Center/Laboratory 'NCSR Demokritos' (Athens).

The Workshop (3 ECTS):

During one week (30 March - 4 April 2020), a workshop for the 'CONSERVATION AND PHYSICOCHEMICAL STUDY OF METAL ARTIFACTS' will take place at Athens and Chalkis in Greece. This workshop provides an unique opportunity for BA, MA, RMA and PhD students to gain more knowledge and a hands-on experience in the conservation of metal objects. Finally, a first approach of physicochemical analyses will be presented. All teaching will be in English.



Contact for information:

Workshop instructor:
Adamantia Panagopoulou
mpanagopoulou@hotmail.com
Application: www.nia.gr

Application deadline:

22 March 2020, or until the places are filled (maximum 12-15 persons).
All participants will receive: 3 ECTS, project notes, certificate & a T-shirt

By the end of the workshop the participants will:

- get knowledge on the exchange of goods and the use of metal objects;
- learn about shapes, types and technology of Byzantine metal objects & improve their knowledge on Byzantine history and archaeology in Greece;
- get acquainted with the basic methods of documentation for the conservation and restoration of Byzantine metal objects;
- learn about the necessity of physicochemical analyses on metal objects;

CONSERVATION AND PHYSICOCHEMICAL STUDY OF NISYROS SHIPWRECK POTTERY



*

Athens, 1 -13 June 2020



Partners in this project: Faculty of Archaeology, Leiden University; Ephorate of Underwater Antiquities (Athens); Netherlands Institute at Athens (NIA); Greek Research Center/Laboratory 'NCSR Demokritos' (Athens).

The Workshop (5 ECTS): During two weeks in the summer of 2020 (1 - 13 June 2020), a workshop for the 'Conservation and Physicochemical Study of Nisyros Shipwreck Pottery' will take place at Athens. The course will be organized by the Faculty of Archaeology, Leiden University (NL), in collaboration with the Ephorate of Underwater Antiquities, Netherlands Institute at Athens (NIA) and the Greek Research Center 'NCSR Demokritos' at Athens.

This workshop provides an unique opportunity for BA, MA, RMA and PhD students to gain more knowledge and a hands-on experience in underwater pottery conservation. Finally, a first approach of physicochemical analyses will be presented. All teaching will be in English.



Contact for information:
Workshop instructor:
Adamantia Panagopoulou
mpanagopoulou@hotmail.com
Application: www.nia.gr

Application deadline:
10 May 2020, or until the
places are filled (maximum
10-12 persons).
All participants will receive:
5 ECTS, project notes,
certificate & a T-shirt

By the end of the workshop the participants will:

- learn about ports and maritime routes in the Mediterranean;
- get knowledge on the exchange of goods and the use of pottery;
- obtain knowledge about shipwrecks in the Aegean;
- learn about shapes, types and technology of Byzantine, Medieval and Post-Medieval pottery & improve their knowledge on Byzantine, Medieval and Post-Medieval history and archaeology in Greece;
- get acquainted with the basic methods of documentation for the conservation and restoration of Medieval and Post-Medieval underwater pottery;
- learn about the necessity of physicochemical analyses on underwater pottery;
- meet not only professionals who work in pottery conservation and in Byzantine, Medieval and Post-Medieval Archaeology in Greece, but who also work in physicochemical analyses of Byzantine, Medieval and Post-Medieval pottery.

ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ –
JOB VACANCIES/FELLOWSHIPS

RESEARCH ASSOCIATES IN THE CONTEXT
OF 'AN INTERNATIONAL RESEARCH
INFRASTRUCTURE FOR HERITAGE
SCIENCE' FUNDED BY THE ANDREW W.
MELLON FOUNDATION

In the context of 'An International Research Infrastructure for Heritage Science', a multi-year program funded by the Andrew W. Mellon Foundation, six one-year positions are available for outstanding early career researchers working on the material aspects of cultural heritage who have an open mind and a strong interest in interdisciplinary collaboration.

The purpose of the Research Associates is to make a contribution to the development of an international research infrastructure for heritage science. This infrastructure should encourage dialogue about the study, presentation and preservation of cultural heritage and contribute to academic discourse about knowledge-based conservation and collection management strategies. It will thus strengthen the bonds between researchers working in museums, universities and heritage institutions worldwide.

You can read more about these positions and apply on [this page](#).

We encourage everyone in our reading this message to share it within their networks to reach as many eligible candidates as possible.

For questions concerning the Andrew W. Mellon Program 'An International Research Infrastructure for Heritage Science', contact Benjamin Rous, project coordinator, or Karin Lieftink, project assistant at info@nicas-research.nl or +31 (0)20-6747360.

Benjamin Rous
Coordinator
Netherlands Institute for Conservation+Art+Science+
Amsterdam NH

RESEARCH ASSOCIATE POSITIONS NICAS

Dear sir, madam,

The Netherlands Institute for Conservation+Art+Science+ (NICAS) welcomes outstanding early career researchers working on the material aspects of cultural heritage. We have availability for six Research Associates, starting their one-year project in September 2020. Rather than offering the opportunity for defining and conducting individual research projects, the main purpose of these positions is gaining insight and understanding of the international field and identifying opportunities and obstacles towards international collaboration in the field of heritage science. The full job posting can be found in the attachment.

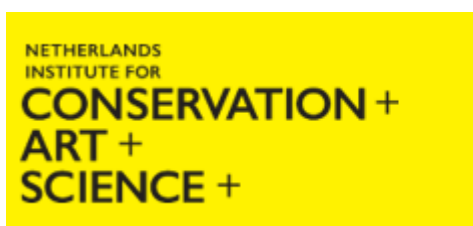
We would kindly ask you to help us in finding the right candidates by sharing this job posting amongst your students and alumni.

It would be greatly appreciated if you could help us with this. If there are any questions, please do not hesitate to contact us.

Please allow me to add to this message below: this is the link through which all applicants can apply: <https://www.rijksmuseum.nl/nl/organisatie/vacatures/nicas-research-associates>.

Kind regards,

Benjamin Rous
Karin Liefink



Hobbemastraat 22
1071 ZC AMSTERDAM
+31 (0)20 674 7583
info@nicas-research.nl
www.nicas-research.nl

MELLON FELLOWSHIPS IN DIGITAL HUMANITIES

The College of Arts and Science is now accepting applications for several fellowship opportunities during the 2020-21 academic year for Vanderbilt faculty, recent Ph.D. graduates, and current graduate students. These fellowships are generously supported by an Andrew W. Mellon Foundation grant that funds the Vanderbilt Center for Digital Humanities, and all fellows are expected to participate in the activities of the center. For the purposes of these fellowships, digital humanities is defined as any intersection of digital technology and humanistic study and public humanities is defined as the work of engaging the broader public in reflecting on the relevance of the humanities to the current conditions of civic and cultural life.

Mellon Faculty Fellowships in Digital Humanities Four one-year fellowships. Each will provide \$10,000 in research funds to support digital scholarship, plus \$10,000 to the faculty fellow's home department or program to replace one course. Faculty fellows will help create and contribute to Digital Humanities Center academic programming while working on their own DH project. Preference will be given to applications describing projects with a clearly explained scope of work, definite deliverables, and that could serve as a steppingstone for future funding. Faculty are encouraged to discuss project ideas with the Center for Digital Humanities at any stage of the development process.

Eligibility and Application: All fulltime faculty are eligible to apply, although non-tenure track faculty are not typically eligible for course release related to the fellowship. Application requirements include a current CV (10 page limit), a letter of application that includes description of the DH project(s) to be pursued (2-3 pages), a brief supporting letter from the applicant's Department Chair or Program Director, and a budget. All materials should be submitted as a single PDF to Dean Bonnie Dow via email to Megan Allen (megan.j.allen@vanderbilt.edu). Deadline for applications is February 24, 2020.

2.

Mellon Postdoctoral Fellowships in Digital and Public Humanities Two one-year fellowships. Each will provide affiliation with the Center during the 2020-21 academic year. Fellowship includes an academic-year salary of \$50,000 with benefits and \$5,000 in research funding. Postdoctoral fellows will work on their own digital and public humanities projects and will devote fifteen hours per week to supporting the operation of the Center for Digital Humanities.

Depending on their skill sets, that support from postdocs could include: teaching DH modules, classes, and/or workshops, organizing events for the Center, and providing technical support. Application requirements include a current CV (5 page limit), a letter of application that includes description of potential DH/PH project(s) to be pursued (2-3 pages), and two letters of recommendation (one must be from Ph.D. advisor. If Ph.D. degree is not completed, letter from advisor must specifically speak to the likelihood of completion by July 1). CV and letter of application should be submitted as a single PDF to Dean Bonnie Dow via email to Megan Allen (megan.j.allen@vanderbilt.edu). Letters of recommendation should be submitted separately by letter writers to Dean Bonnie Dow

via email to Megan Allen (megan.j.allen@vanderbilt.edu). Deadline for applications is March 9, 2020.

3.

Mellon Graduate Student Fellowships in Digital Humanities Eight one-year fellowships. Each will provide affiliation with the Center during the 2020-21 academic year. The Mellon Graduate Fellowships in Digital Humanities are intended for students from Vanderbilt humanities or qualitative social sciences doctoral programs. The Graduate Fellows will pursue study of digital humanities through coursework, research, or dissertation writing, depending on their stage of doctoral study and the requirements of their doctoral programs. Fellowship comes with a one year stipend and benefits.

Eligibility and Application: Graduate students in good standing may apply to be Graduate Fellows in any year after their first year of graduate study with the endorsement of their department and advisor.

Application requirements include a current CV (5 page limit), a letter of application that describes the DH research goals of the fellowship (2 pages), and three letters of recommendation (one must be from your DGS). CV and letter of application should be submitted as a single PDF to Dean Bonnie Dow via email to Megan Allen (megan.j.allen@vanderbilt.edu). Letters of recommendation should be submitted separately by letter writers to Dean Bonnie Dow via email to Megan Allen (megan.j.allen@vanderbilt.edu). Deadline for applications is March 9, 2020.

ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS
METALWORK WEAR ANALYSIS TRAINING
COURSE, AARHUS, DENMARK, 30-31
MARCH, 2020

Hello,

List readers might be interested in this 2-day Metalwork Wear Analysis Training Course for PhD students, which will be taking place at Aarhus, Denmark, on 30-31 March.

Instructors: A. Dolfini and H. Wrobel Nørgaard. See link below for further information.

<https://phdcourses.dk/Course/70777>

Best wishes,

Andrea

Dr Andrea Dolfini

[Senior Lecturer in Later Prehistory](#)

[Convenor of MATCH - Materiality, Artefacts & Technologies in Culture & History](#)

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<http://newcastle.academia.edu/AndreaDolfini>

MASTER'S PROGRAMME ON FIELD ARCHAEOLOGY ON LAND AND UNDER THE SEA

The Graduate School of the University of Cyprus (<https://nam10.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.ucy.ac.cy%2Fgraduateschool%2Fen%2Fadmissions%2Fpostgraduate-programmes-places&data=02%7C01%7Caeeanet%40lists.ku.edu%7Ca420e529233d4781562708d7bb9f055a%7C3c176536afe643f5b96636feabbe3c1a%7C0%7C1%7C637184163981758882&sdata=bZT3t5RCCjkatgQeF69XzJgQ1PRyuW1b5FBDPmkKUPk%3D&am p;reserved=0>) announces the opening of ten (10) places for the postgraduate programme in Field Archaeology on Land and Under the Sea (Webpage: https://nam10.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.ucy.ac.cy%2Ffield_arch%2Fen%2F&data=02%7C01%7Caeeanet%40lists.ku.edu%7Ca420e529233d4781562708d7bb9f055a%7C3c176536afe643f5b96636feabbe3c1a%7C0%7C1%7C637184163981758882&sdata=vA9fhDFLxrEBrXBze4wF6wr31MHF51lc2eE2mN0Fnv4%3D&reserved=0)

Candidates should hold a degree in Archaeology, History, Classics, Anthropology or other related fields of research (History of Art, Architecture, Geography, Geology, Physics, Chemistry, Engineering).

Graduates of the University of Cyprus and Greek Universities must have an undergraduate diploma with a cumulative grade of 6,5 or higher. The equivalent is required for graduates from other universities. The applicants must also speak English at a satisfactory level.

A short statement (up to 650 words) of personal goals and research interests, in English should be included in the application. Candidates who meet the necessary requirements will be called for an interview.

The submission of applications for the postgraduate programmes for *Fall Semester 2020/2021* expires on *03/04/20 at 12:00 noon.*

Programme Coordinators

Associate Professor Stella Demesticha (demesticha@ucy.ac.cy)
Associate Professor Athanasios Vionis (vionis@ucy.ac.cy)

For further information, please contact the Department's Secretary:

Tel: 22 892180, 22 893560, Fax: 22 895068

Scholarships for newcomers Master Students

Partial scholarships, which cover full tuition fees, are available for the Master degree students.

FAQ – Praxandros scholarships

https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.ucy.ac.cy%2Fgraduateschool%2Fdocuments%2FYpotrofies%2Fypotrofies_Praxandros_newcome%2Frs_revised_5&data=02%7C01%7Caeganeet%40lists.ku.edu%7Ca420e529233d4781562708d7bb9f055a%7C3c176536afe643f5b96636feabbe3c1a%7C0%7C1%7C637184163981758882&sdata=hje6BXw4vkjcl2HnLhGgbcKM2mlq0%2BI64v9nmkb8QFE%3D&reserved=0.2.20_FAQ_english.pdf

Η Σχολή Μεταπτυχιακών Σπουδών του Πανεπιστημίου Κύπρου (<https://nam10.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.ucy.ac.cy%2Fgraduateschool%2Fel%2Fadmissions%2Fpostgraduate-programmes-places&data=02%7C01%7Caeganeet%40lists.ku.edu%7Ca420e529233d4781562708d7bb9f055a%7C3c176536afe643f5b96636feabbe3c1a%7C0%7C1%7C637184163981758882&sdata=FI3CuPDDayvtlEiguYsxRI1oGsF%2FI1itds1%2FSdTYcs%3D&reserved=0>), προκηρύσσει δέκα (10) θέσεις για το μεταπτυχιακό πρόγραμμα Χερσαία και Υποβρύχια Αρχαιολογία Πεδίου (https://nam10.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.ucy.ac.cy%2Ffield_arch%2Fel%2F&data=02%7C01%7Caeganeet%40lists.ku.edu%7Ca420e529233d4781562708d7bb9f055a%7C3c176536afe643f5b96636feabbe3c1a%7C0%7C1%7C637184163981758882&sdata=D9V2hvX%2F%2Fxrjxb74qR0x9hq%2BNuMt7QcTOpBL8IdHfY%3D&reserved=0)

Οι υποψήφιοι θα πρέπει να έχουν πτυχίο από αναγνωρισμένα πανεπιστήμια σε έναν από τους παρακάτω κλάδους: Αρχαιολογία, Ιστορία, Κλασικές Σπουδές, Ανθρωπολογία ή άλλους σχετικούς ερευνητικούς τομείς (Ιστορία τέχνης, Αρχιτεκτονική, Γεωγραφία, Γεωλογία, Φυσική, Χημεία, Μηχανική). Οι απόφοιτοι πανεπιστημίων της Κύπρου ή της Ελλάδας θα πρέπει να έχουν βαθμό πτυχίου τουλάχιστον 6,5. Για τους απόφοιτους άλλων πανεπιστημίων ισχύει το όριο που αντιστοιχεί στον βαθμό αυτό. Απαραίτητη προϋπόθεση είναι η γνώση της αγγλικής γλώσσας σε ικανοποιητικό επίπεδο.

Η αίτηση περιλαμβάνει σύντομο υπόμνημα των ερευνητικών ενδιαφερόντων του υποψηφίου, το οποίο πρέπει να είναι γραμμένο στην αγγλική γλώσσα και να μην υπερβαίνει τις 650 λέξεις. Οι υποψήφιοι που πληρούν τα απαιτούμενα προσόντα θα καλούνται σε προσωπική συνέντευξη.

Η υποβολή αιτήσεων μέσω του συστήματος στα μεταπτυχιακά προγράμματα για το *Χειμερινό Εξάμηνο 2020/2021* λήγει στις *03/04/20 και ώρα 12:00 το μεσημέρι.*

Συντονιστές Προγράμματος

Αναπληρώτρια Καθηγήτρια Στέλλα Δεμέστιχα (demesticha@ucy.ac.cy) Αναπληρωτής Καθηγητής Αθανάσιος Βιώνης (vionis@ucy.ac.cy)

Πρόγραμμα Υποτροφιών “ΠΡΑΞΑΝΔΡΟΣ” σε Νεοεισερχόμενους Φοιτητές Μάστερ

Στους φοιτητές των προγραμμάτων Μάστερ, παραχωρούνται Μερικές υποτροφίες. Οι Μερικές υποτροφίες καλύπτουν το σύνολο των διδάκτρων του προγράμματος σπουδών

https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.ucy.ac.cy%2Fgraduateschool%2Fdocuments%2FYpotrofies%2Fypotrofies%2FPraxandros_newcome%2Frs_revised_5.2.20_FAQ_greek.pdf&data=02%7C01%7Caegaeant%40lists.ku.edu%7Ca420e529233d4781562708d7bb9f055a%7C3c176536afe643f5b96636feabbe3c1a%7C0%7C1%7C637184163981768867&sdata=6umCnhcJ%2BUfZiSMd1RwhWI7e2TQrAWOdF8HIWk2w%3D&reserved=0

Dr Giorgos Papantoniou

Senior Research Fellow, University of Cyprus *Visiting Research Fellow, Trinity College Dublin*

<https://nam10.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.ucy.ac.cy%2Fen%2Fpeople%2Fgiorgosp&data=02%7C01%7Caegaeant%40lists.ku.edu%7Ca420e529233d4781562708d7bb9f055a%7C3c176536afe643f5b96636feabbe3c1a%7C0%7C1%7C637184163981768867&sdata=7%2BPFtc0hGR7sxnQvUGvfMlxmqh48bsFPAHsxpVzJ1xE%3D&reserved=0>

Archaeological Research Unit, Department of History and Archaeology University of Cyprus P.O.Box 20537, Nicosia 1678 Cyprus

Unlocking Sacred Landscapes Network (funded by the Cyprus Research and Innovation Foundation; Project: EXCELLENCE/1216/0362):

<https://nam10.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.ucy.ac.cy%2Funsala%2F&data=02%7C01%7Caegaeant%40lists.ku.edu%7Ca420e529233d4781562708d7bb9f055a%7C3c176536afe643f5b96636feabbe3c1a%7C0%7C1%7C637184163981768867&sdata=B3JBwY8GX4wq6n2MLb6WcEXVdWBPjB0%2FCxokL3bBS8%3D&reserved=0>

INTERNET SITES

ORIENTDAMS - VISUAL ASSESSMENT OF DAM ARCHAEOLOGICAL IMPACTS

Online at <http://www.orientlab.net/orientdams/> is the website of the OrientDams project. The project aims at providing a detailed visual assessment on the impact of dams on archaeological sites in the Middle East and Northern Africa (MENA). Four case studies of different magnitudes (Turkey, the Euphrates river, the two Aswan dams and the planned Makhul dam) have been considered in order to identify different issues related to the construction of dams.

Almost 2500 flooded archaeological sites and approximately 1300 km of ancient rivers submerged by the dams reservoirs have been mapped from the selected study cases across the MENA area. In fact, it must be stressed that these numbers are incomplete as large parts of the reservoir areas have not been systematically investigated. The methodology applied integrates archaeological and geo-spatial open-access datasets, organized in a WebGIS in order to foster data sharing and research replicability.

OrientDams addresses the issue of the impact of dams on the cultural heritage in the MENA, through a multi-scalar assessment of damage, providing quantitative and multi-temporal data on the archaeological sites submerged or damaged by both hydraulic infrastructures and the resulting water reservoirs (some results have now been made available at <https://www.sciencedirect.com/science/article/abs/pii/S1296207418305569>).

The current website – actually a work in progress – presents in a scientific fashion the elaborations and studies carried out for characterizing the impact on near eastern landscapes represented by the construction of dams, supplying the scholarly community with an elaborate tool of unprecedented precision. The website, branching from the OrientGIS (www.orientgis.net) project, will continue to be updated.

We at OrientDams believe in open access and sharing of scientific information: this website is about calling for a cooperation among scholars to explore and visualize our models on a historical landscape for which we do possess significant archaeological data. We do believe in networked science, in contrasting our differing views on the past with the aim of refining our understanding of social and economic processes. Engagement means believing in the value of digital outputs, of sharing ideas, of open discussions: for this reason, we are looking forward to cooperating with all scholars willing to confer – with due credit – their own materials and elaborations on landscapes affected by the creation of dams in the Near East to this website so that it becomes an open forum and a place in which experimenting different methodological approaches for assessing the impact of dams on the natural and cultural heritage.

The OrientDams Project has been funded as a Unit of the HeAT project benefiting of a JPI CH Heritage Plus 2015-2018 grant, with Nicolò Marchetti of the Alma Mater Studiorum-University of Bologna as the Unit scientific responsible. The materials presented in this research website can be freely used respecting their licencing agreement (all our original elaborations are the copyleft of the OrientDams Project).

Satellite imagery and cartographic materials have been downloaded, georeferenced and then elaborated or modified by the team of the DICAM Department in Bologna, led by Gabriele Bitelli with Francesca Franci.

Simone Mühl, Serena Nicolini and Federico Zaina have been invaluable in designing the GIS shapefiles for the distribution of sites and in handling survey data from Iraq, Egypt and Turkey respectively.

In the near future, the existing cooperation within the CRANE 2.0 network will allow further improvements to our platform. Fairly soon, the materials presented in the website will be made individually available respecting their licensing agreement. All individual and corporate credits will be listed under each image, with – where of interest – some technical explanations attached too. News about the updates for metadata and additional functions will be listed in the Feeds section of the website.

This website has been conceived by Nicolò Marchetti (Scientific Editor), with Silvano Bertossa (Web Engineer) setting up the PostgreSQL and GeoServer including the current Leaflet tool for the WebGIS, Valentina Orrù Web designer and Webmaster, Francesca Franci and Federico Zaina editing and managing the OrientDams WebGIS.

EXPLORE ANCIENT ATHENS ONLINE THROUGH 3D MODELS, CREATED BY ONE ANIMATOR OVER 12 YEARS

All of us have fun pastimes — roller derby, Civil War reenactment, erotic baking — but since 2007, Athens-based photographer and animator Dimitris Tsalkanis has cultivated a sort of unusual hobby: recreating ancient Athens via 3D modeling software. The project started when he was still in university, studying art and art history along the way to a Master's in Visual Effects.

“I had no previous experience on 3D and I started experimenting in my spare time,” said Tsalkanis in an email interview with Hyperallergic.

“I always liked archaeology and since I am from Athens, I was always interested in its monuments and history. During my research, I realised that up until then no one had attempted a complete 3D reconstruction of ancient Athens.”

In 2008, Tsalkanis launched a website, Ancient Athens 3D, which features monuments from the ancient metropolis through seven historical periods. Tsalkanis stays up to date with his fantasy city, updating reconstructions constantly for better quality of models and better archaeological and historical accuracy.

“This whole project continues to be and functions as a personal creation, without any official backing whatsoever,” said Tsalkanis.

“Those who have at times contributed with their knowledge or advice, have done it for free and I am really grateful to them.”

Visitors to the site can browse reconstructions that date back as early as 1200 BCE, the Mycenaean period — or Bronze Age — through Classical Athens, featuring the rebuilds made necessary by the Greco-Persian War, and ages of occupation by Romans and Ottomans.

Tsalkanis traces the evolution of sites like the Acropolis throughout the ages, the rise and fall of the city walls, the Agora, which served as center of city life, and various temples, libraries, and other fortifications.

“3D is an amazing tool to visualize the past and to simulate what the people who lived 2,500 years ago might have experienced while walking around Athens,” said Tsalkanis. “You can immerse into this environment or you can even 3D print it if you like. Thanks to this rapidly advancing technology, I am very happy to see many indie projects with ancient reconstructions spring up all over the world.”

Tsalkanis describes his reconstructions of Athens as “artistic” or “stylistic,” meaning that the monuments are (digitally) restored to their completeness, whether that condition is well documented or almost completely hypothetical — but the work he's done is always based on the best archaeological information available.

The eastern side of the Roman Forum compound; view from the west. The shop doors are visible. This reconstruction was created with the help of Chrysanthos Kanellopoulos, professor of Archaeology in the University of Athens.

“This approach was applied into actual monument restorations, especially during the 19th century,” said Tsalkanis, “and while it is nowadays considered to be unacceptable, 3D technology gives us the opportunity to experiment in every way possible without harming the actual monuments. So, although my digital reconstructions had been used in many different ways, my intention is that they should serve as an educational and didactic tool on how a monument or an ancient urban landscape might have looked like.”

Ancient Athens 3D is a monument in itself, representing 12 years of painstaking research and rendering by Tsalkanis, aided occasionally by volunteer input. In addition to the website, Ancient Athens 3D has a YouTube channel, a presence on Facebook, and an Instagram. Even after more than a decade of effort, Tsalkanis has only greater ambitions for the project.

“Technology nowadays gives many opportunities for interactive applications, like smartphone apps,” he said. “This area is definitely something that I am looking forward in the future. I really hope that this project in general will be a starting point for people who want to discover the exciting history of Athens!”

Please visit the site: <https://hyperallergic.com/542093/ancient-athens-3d/> [Go there for many pix]

INTRODUCING MUSEUM SAVVY - A NEW WEBSITE AND BLOG FOR MUSEUM PROFESSIONALS

Hello!

I recently launched a new blog and website as a resource for museum, archive, public history, conservation, and cultural heritage professionals. It has museum jobs, museum studies programs by subject, museum career development, resources for professionals and a blog!

Check us out and feel free to share with colleagues, <http://museumsavvy.com/index.html>
We are also on Facebook, Instagram and Twitter and will post museum jobs and updates weekly!

<https://www.facebook.com/museumsavvy>
<https://www.instagram.com/museumsavvy/>
<https://twitter.com/MuseumSavvy>

Thank you!

Jeannine Pedersen-Guzman
Archaeological Collections Coordinator
Colorado State University
Fort Collins CO
(970) 491-5497

SPY PLANE PHOTOS OPEN WINDOWS INTO ANCIENT WORLDS

Decades-old photography from the U-2 spy program now offers a time machine to see traces of the historical and ancient past in the Middle East.

Please visit the site: <https://www.sapiens.org/archaeology/satellite-imagery/>

Η ΑΡΧΑΙΟΜΕΤΡΙΑ ΣΤΗΝ ΕΛΛΑΔΑ: **ΤΑ ΠΡΩΤΑ 100 ΧΡΟΝΙΑ**

Διάλεξη της προϋσταμένης του Τμήματος Συντήρησης Φυσικών-Χημικών Ερευνών και Αρχαιομετρίας του ΥΠΠΟ Δρ. Γεωργιάνας Μωραΐτου στις 25/2/2020 στην Εταιρεία Φίλων του Εθνικού Αρχαιολογικού Μουσείου.

ΣΥΝΟΨΗ

Η απαρχή της «αρχαιομετρίας» διεθνώς χρονολογείται στην επαναστατική Γαλλία την τελευταία δεκαετία του 18ου αιώνα και οφείλεται στον συνδυασμό της τελειοποίησης της σταθμικής χημικής ανάλυσης και στο περιεχόμενο των “cabinets de curiosité” της εποχής, που περιλάμβαναν αρχαιολογικά αντικείμενα. Ήδη όμως από τις πρώτες ανασκαφές χρονολογείται και το ενδιαφέρον για τη φυσικοχημική διερεύνηση των αρχαιοτήτων.

Όσον αφορά στην Ελλάδα, μέχρι σήμερα ήταν κοινά αποδεκτό ότι το ενδιαφέρον για την αρχαιομετρική έρευνα ξεκίνησε τη δεκαετία του 1960 μαζί με την αναγέννηση της Αρχαιολογικής Υπηρεσίας. Νεότερα όμως δεδομένα δείχνουν ότι, αν και δεν υπήρχε σαν όρος η αρχαιομετρία, η φυσικοχημική διερεύνηση των αρχαιοτήτων ξεκίνησε στην Ελλάδα πριν τα μέσα του 19ου αιώνα και συνδέεται άμεσα με την ίδρυση του νέου Ελληνικού κράτους και τη μέριμνα για τις αρχαιότητες.

Η σημασία της έρευνας σχετικά με τις παλαιότερες αρχαιομετρικές μελέτες είναι σημαντική όσο σημαντική είναι και η ιστορία της αρχαιολογίας και γενικότερα των επιστημών. Στόχος της έρευνας είναι να παρουσιαστεί ένα χρονολογικό δέντρο πάνω στο οποίο θα αναρτώνται όλα τα νεότερα στοιχεία κάθε φορά που αυτά αποκαλύπτονται. Η βιβλιογραφία για τα ελληνικά δεδομένα είναι ελάχιστη. Οι πληροφορίες είναι διάσπαρτες μέσα στις αρχαιολογικές δημοσιεύσεις.

Τα παλαιότερα αποτελέσματα που έχουν προκύψει είναι τα ακόλουθα: για τον 19ο αιώνα αφορούν στον χημικό Ξαβέριο Λάνδερερ (1809-1868), και στη συνέχεια στον Αναστάσιο Χρηστομάνο (1841-1906) και τον Κωνσταντίνο Μητσόπουλο (1844-1911). Στα τέλη του 19ου και αρχές του 20ου αιώνα υπάρχουν περισσότεροι επιστήμονες που ασχολούνται με την αρχαιομετρία με προεξάρχοντα τον χημικό Όθωνα Ρουσόπουλο (1856-1922), αλλά και τον καθηγητή του Πανεπιστημίου Γεώργιο Κρίνο (1850- 1935), τον Αναστάσιο Δαμβέργη (1857-1920), τον Ιωάννη Βαμβακά και τον Κωνσταντίνο Ζέγγελη (1870-1957).

Από τα μέχρι σήμερα αποτελέσματα γίνεται αντιληπτό ότι παρά το γεγονός ότι από ίδρύσεως Ελληνικού κράτους οι αρχαιολόγοι αποζητούσαν την αρχαιομετρική έρευνα των ευρημάτων τους, αυτό γινόταν εκτός υπηρεσίας από τους θετικούς επιστήμονες σε επίπεδο κρατικής υποστήριξης (συμμετοχή σε επιτροπές), προσωπικής εξυπηρέτησης ή με παροχή υπηρεσιών. Η αρχαιομετρία δεν θεσμοθετήθηκε παρά μόνο τη δεκαετία του 1980 αφ’ ενός μεν στο ΕΚΕΦΕ Δημόκριτος με τη δημιουργία του «Εργαστηρίου Αρχαιομετρίας», αφ’ ετέρου δε στην Αρχαιολογική Υπηρεσία με την άτυπη δημιουργία, τον εξοπλισμό και τη λειτουργία του «Χημείου» στο Εθνικό Αρχαιολογικό Μουσείο επι Γενικού Εφόρου Αρχαιοτήτων Ν. Γιαλούρη. Το εν λόγω Χημείο δεν θεσμοθετήθηκε

παρά το 2003 ως «Τμήμα Χημικών και Φυσικών Ερευνών» με το ΠΔ 191/2003, ΦΕΚ/Α' /146 άρθρο 51.

Please visit the site: <https://www.blod.gr/lectures/i-arhaiometria-stin-ellada-ta-prota-100-hronia/?fbclid=IwAR3PJIDQENCQszqAs4xucakFSQhgePZhN-p3VggbiCeJKaR6J0hF283aDUk>

ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

RADIOCARBON, VOLUME 62, ISSUE 1, **FEBRUARY 2020**

Research article

[Luminescence Dating of the Iron Age Deposits from Tell Damiyah in the Jordan Valley](#)

Sahar al Khasawneh, Andrew Murray, Zeidan Kafafi, Lucas Petit

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 1 - 12

doi: 10.1017/RDC.2019.90 Published Online on 6 August 2019

[High Precision ¹⁴C Analysis in Small Seawater Samples](#)

Núria Casacuberta, Maxi Castrillejo, Anne-Marie Wefing, Silvia Bollhalder, Lukas Wacker

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 13 - 24

doi: 10.1017/RDC.2019.87 Published Online on 19 August 2019

[The End of the “Green Oasis”: Chronological Bayesian Modeling of Human and Environmental Dynamics in the Bahariya Area \(Egyptian Sahara\) from Pharaonic Third Intermediate Period to Medieval Times](#)

Frédéric Colin, Anita Quiles, Mathieu Schuster, Dominique Schwartz, Catherine Duvette, Sylvie Marchand, Mennat-Allah El Dorry, Johan van Heesch

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 25 - 49

doi: 10.1017/RDC.2019.106 Published Online on 16 September 2019

[Using Carbon Isotopes to Fight the Rise in Fraudulent Whisky](#)

Gordon T Cook, Elaine Dunbar, Brian G Tripney, Derek Fabel

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 51 - 62

doi: 10.1017/RDC.2019.153 Published Online on 8 January 2020

[Radiocarbon Dating at Groningen: New and Updated Chemical Pretreatment Procedures](#)

M W Dee, S W L Palstra, A Th Aerts-Bijma, M O Bleeker, S de Bruijn, F Ghebru, H G Jansen, M Kuitens, D Paul, R R Richie, J J Spriensma, A Scifo, D van Zonneveld, B M A A Verstappen-Dumoulin, P Wietzes-Land, H A J Meijer

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 63 - 74

doi: 10.1017/RDC.2019.101 Published Online on 9 September 2019

[New Radiocarbon Dates Show Early Neolithic Date of Flint-Mining and Stone Quarrying in Britain](#)

Kevan Edinborough, Stephen Shennan, Anne Teather, Jon Baczkowski, Andrew Bevan, Richard Bradley, Gordon Cook, Tim Kerig, Mike Parker Pearson, Alexander Pope, Peter Schauer

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 75 - 105

doi: 10.1017/RDC.2019.85 Published Online on 7 August 2019

[Marine Bivalve Feeding Strategies and Radiocarbon Ages in Northeast Atlantic Coastal Waters](#)

Elena Lo Giudice Cappelli, William E N Austin

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 107 - 125

doi: 10.1017/RDC.2019.68 Published Online on 1 July 2019

[New Evidence for a Mid- to Late-Holocene Change in the Marine Reservoir Effect Across the South Pacific Gyre](#)

Fiona Petchey

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 127 - 139

doi: 10.1017/RDC.2019.103 Published Online on 20 September 2019

[Human Activity Recorded in Carbon Isotopic Composition of Atmospheric CO₂ in Gliwice Urban Area and Surroundings \(Southern Poland\) in the Years 2011–2013](#)

Natalia Piotrowska, Anna Pazdur, Sławomira Pawełczyk, Andrzej Z Rakowski, Barbara Sensuła, Konrad Tudyka

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 141 - 156

doi: 10.1017/RDC.2019.92 Published Online on 19 August 2019

[The Rise and Fall of a Parallel-Walled Structure: Assessing the Site Sequence at Pachamta](#)

Teresa P Raczek, Prabodh Shirvalkar, Esha Prasad, Lalit Pandey

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 157 - 168

doi: 10.1017/RDC.2019.91 Published Online on 13 August 2019

[Revisiting the Timing of the Northern Lobe of the White River Ash Volcanic Event in Eastern Alaska and Western Yukon](#)

Joshua Reuther, Ben Potter, Sam Coffman, Holly Smith, Nancy Bigelow

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 169 - 188

doi: 10.1017/RDC.2019.110 Published Online on 11 September 2019

[Radiocarbon Map of a Bomb-Peak Labeled Human Eye](#)

Laszlo Rinyu, Robert Janovics, Mihaly Molnar, Zoltan Kisvarday, Adam Kemeny-Beke

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 189 - 196

doi: 10.1017/RDC.2019.78 Published Online on 25 July 2019

[Origin and Alteration of Organic Matter in Hydrate-Bearing Sediments of the Rio Grande Cone, Brazil: Evidence from Biological, Physical, and Chemical Factors](#)

Luiz F Rodrigues, Kita D Macario, Roberto M Anjos, João M M Ketzer, Anderson J Maraschin, Adolpho H Augustin, Vinicius N Moreira, Victor H J M dos Santos, Marcelo C Muniz, Renan P Cardoso, Adriano R Viana, Dennis J Miller

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 197 - 206

doi: 10.1017/RDC.2019.109 Published Online on 2 September 2019

[¹⁴C Blank Assessment in Small-Scale Compound-Specific Radiocarbon Analysis of Lipid Biomarkers and Lignin Phenols](#)

Shuwen Sun, Vera D Meyer, Andrew M Dolman, Maria Winterfeld, Jens Hefter, Wolf Dummann, Cameron McIntyre, Daniel B Montluçon, Negar Haghipour, Lukas Wacker, Torben Gentz, Tessa S van der Voort, Timothy I Eglinton, Gesine Mollenhauer

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 207 - 218

doi: 10.1017/RDC.2019.108 Published Online on 23 September 2019

[Verification of Radiocarbon Transport Predicted by Numerical Modeling in the Porous Formation of NE Hungary Considering Paleo-Hydrogeology](#)

Ferenc Székely, József Deák, Péter Szűcs, László Kompár, Balázs Zákányi, Mihály Molnár

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 219 - 233

doi: 10.1017/RDC.2019.84 Published Online on 24 July 2019

[Spatial Distribution of ¹⁴C in Tree Leaves from Bali, Indonesia](#)

Tamás Varga, A J Timothy Jull, Zsuzsa Lisztes-Szabó, Mihály Molnár

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 235 - 242

doi: 10.1017/RDC.2019.113 Published Online on 11 October 2019

[New Radiocarbon Dates for the Late Gravettian in Eastern Central Europe](#)

Jarosław Wilczyński, Tomasz Goslar, Piotr Wojtal, Martin Oliva, Ursula B Göhlich, Walpurga Antl-Weiser, Petr Šída, Alexander Verpoorte, György Lengyel

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 243 - 259

doi: 10.1017/RDC.2019.111 Published Online on 24 October 2019

Corrigendum

[Radiocarbon Dating at Groningen: New and Updated Chemical Pretreatment Procedures – CORRIGENDUM](#)

M W Dee, S W L Palstra, A Th Aerts-Bijma, M O Bleeker, S de Bruijn, F Ghebru, H G Jansen, M Kuitens, D Paul, R R Richie, J J Spriensma, A Scifo, D van Zonneveld, B M A A Verstappen-Dumoulin, P Wietzes-Land, H A J Meijer

[Radiocarbon, Volume 62 / Issue 1](#), February 2020, pp 261 - 261

doi: 10.1017/RDC.2019.140 Published Online on 19 November 2019

[Verification of Radiocarbon Transport Predicted by Numerical Modeling in the Porous Formation of NE Hungary Considering Paleo-Hydrogeology – CORRIGENDUM](#)

Ferenc Székely, József Deák, Péter Szűcs, László Kompár, Balázs Zákányi, Mihály Molnár

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Regards,

Lyudmil Vagalinski
editor

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ΕΙΔΗΣΕΙΣ - NEWS RELEASE

OUR EARLY NEOLITHIC CANINE COMPANIONS, BY LISA YEOMANS

The close relationship between humans and dogs has existed for many millennia. Recent work in the Black Desert region of Jordan has highlighted just how important dogs were as hunting companions to Early Neolithic groups well over 10,000 years ago.

One of these sites, Shubayqa 6, dated to the Pre-Pottery Neolithic A (PPNA) has an archaeological sequence spanning 11,600 to 10,600 years ago, although the site would not have been continuously occupied over this entire timeframe.

The site is located in a semi-arid region in northeast Jordan; it is difficult to imagine the Late Pleistocene and Early Holocene environment that offered a rich variety of resources for humans to exploit.

What is now a dry playa, only flooded for short windows of time after winter rains, was once a lush wetland attracting migrating waterfowl and supporting varied vegetation perhaps best envisioned by the wetlands at Azraq.

The semi-circular stone structures forming the settlement built during the PPNA at Shubayqa 6 were positioned at the edge of this wetland, well placed for access to water and other resources.

The people who lived at Shubayqa 6 hunted a range of wild animals including gazelle and wetland birds in addition to gathering plant resources from the landscape. Imported flint and the ready supply of basalt were manufactured into tools for processing the carcasses of hunted prey and gathered plants. These activities generated large accumulations of waste discarded in midden areas and ideal for archaeologists to study the intricacies of everyday life.

Amongst these remains is evidence that dogs were living side-by-side with people. The bones of the dogs themselves were not common and difficult to differentiate from closely related species such as their ancestor, the wolf.

The best evidence for the presence of dogs are bones that have been gnawed, swallowed and passed through the digestive tract of another animal. These processes leave distinctive characteristics visible on the surface of the bones where the digestive system has started to attack and break-down the faunal remains).

Example of the characteristics displayed by bones that had been digested (note the scalloped surface, thinned and sharpened edges and signs of acid widening natural holes in the bone structure).

The size of the bones are often too large to have been swallowed by humans. Carnivores, other than dogs, could potentially have been responsible but such wild animals would drag scraps of food away to feed on rather than remaining in the settlement close to

humans. Small fragments of bone eaten by carnivores were found very frequently in the middens, even within the structures and scattered amongst the rest of the waste discarded by people at Shubayqa 6. This is a very clear indication that dogs were living in and around the settlement.

The discovery of dogs in the Early Neolithic is not a great surprise. We already know that dogs had been domesticated for some time with evidence from the Southern Levant dating back to the preceding Late Natufian period, perhaps only 1000 years earlier than the evidence for dogs at Shubayqa 6 but feasibly as early as 14,500 years ago based on estimates by researchers studying genetics. The Late Natufian evidence is based on examples of humans buried with their canine companions found at Hayonim and Ain Mallaha indicating a bond between the two species. But we do not know if the dogs at Shubayqa 6 were descendants of these Late Natufian animals from the Mediterranean zone of the Southern Levant or if they represent a new domestication event. Either scenario is entirely possible.

Humans probably benefited from the domestication of dogs in many ways. Dogs could have offered early warning of danger and perhaps a source of comfort. However, their ability to aid humans in hunting quests was certainly a major factor in the development of a close relationship between dogs and humans. If we compare the animals hunted at Shubayqa 6 to those hunted earlier in roughly the same location, at Shubayqa 1 in the preceding Natufian period, we find evidence for an increase in small fast prey such as hares and ground dwelling birds once domestic dogs were present.

One of the main benefits of dogs was probably their prowess in running down small, fast animals. Such skills resulted in humans appreciating their canine compatriots to the extent that dogs were free to roam the settlement, scavenging or perhaps deliberately fed waste. Since the time of this early cooperation between humans and dogs, the two species have had a bond that has not been broken. For many of us today, dogs are essential in our lives for reasons such as companionship; this merely represents the evolution of our relationship to canines which started many millennia ago when humans and dogs mutually benefited by forming an alliance as hunting partners.

There is still much work to be done on the faunal assemblage from Shubayqa 6. At this stage the remains of the dogs themselves are quite rare with the exception of an articulated forelimb of one animal found in a midden and a smattering of disarticulated bones from across the site. When the entire faunal assemblage is studied, more details will come to light on the how humans and dogs lived together at a time when people were just beginning to develop their close relationship to canines.

Lisa Yeomans is Associate Professor in the Department of Cross-Cultural and Regional Studies at the University of Copenhagen.

Please visit the site: <http://www.asor.org/anetoday/2020/01/neolithic-canine> [Go there for pix and better format]

LEARNING THE ART OF ANCIENT IRRIGATION THE NABATEAN WAY, BY SAEB RAWASHDEH

The first people to green the desert? Nabateans who built Petra were like the Mayans of the Middle East. The ancient people were developed in agriculture, spirituality and architecture. Archaeologists dig into how they dealt with drought in Jordan, one of the driest countries on earth.

Water harvesting, flood control and water storage were essential for the survival of the Nabataeans in the arid area of Petra, which is modern day Jordan. One of the driest countries on the planet, the early settlers there had to invent novel ideas to survive. They brought in engineers from afar, Rome probably, and built aqueducts and a water storage system that might be even able to produce drinkable water by today's standards.

The book, The Petra Siq: Nabataean Hydrology Uncovered, published in 2003 by a Swiss architect and archaeologist Ueli Bellwald dealt with the very complex hydrological (water collection) system of the Nabataean capital, instead of the well-known temples and necropolis.

Water collection was an every day and activity and we are grateful that researchers look into the past so we can understand how to survive tomorrow. Green Prophet interviews Bellwald to learn more.

Ueli Bellwald studies how the Nabateans collected water for agriculture. To survive and thrive.

The location of Petra was significant and it provided indispensable water supply and flash flood retention systems, explains Bellwald who spent decades studying and writing about the hydraulic network of the Nabataeans.

Without the flash flood system, they wouldn't last a year According to Bellwald, who has also lived at Petra itself, the city was built inside a widening of the Wadi Musa, a natural runoff water drainage channel for a surface of 87 square kilometers; he added that without the construction of the highly sophisticated flash flood retention system Petra would not have survived a single winter rainy season.

Due to a geographical and a geological location of Petra there were no springs inside the city area which made things more difficult for its inhabitants. Because of the geological conditions, all main springs in the area are located on the terraces of actual Wadi Musa, at a height of about 1,300 meters above the sea level, Bellwald explains, noting that the drinking water had to be led down to the city by long aqueducts.

The areas of the tombs and sanctuaries around the city served for collecting and storing water in large cisterns, and that water was used for agricultural purposes, he underlines.

The Nabataeans constructed a complex network of aqueducts and cisterns that is not in use now.

“If you take the number of drinking water reservoirs fed by the aqueducts and the number of cisterns for the storage of collected runoff water known up to today, you get a total number of more than 200 storage facilities with a capacity of about 40 million liters of water,” Bellwald underlined.

It is obvious that at the beginnings, when the city was established, there was no sufficient local expertise that would meet the requirements of the hydraulic systems to be built.

Just like today they brought in engineers “I myself discovered a lot of features which did not fulfill their duties and were heavily damaged during their first strain and had to be rebuilt afterwards,” Bellwald noted, adding that very close similarities with other hydraulic installations in Rome and mainly in the Ionian cities, like Pergamon, lead him to the conclusion that the Nabataean authorities employed engineers from abroad and then adopted and further developed the basic expertise.

“For instance the remains of the very first spring water aqueduct which I excavated in the Petra Siq and another section which Graf, Schmid and Bedal [archaeologists specialized in the Nabateans and Petra] excavated in 2004/05 near the Temenos Gate, built in the middle of the 1st century BC, follows closely the model of Aqua Marcia in Rome, whereas the Khubtha North Aqueduct, the actually visible Siq Aqueduct and the Ain Braj Aqueduct follow models from Pergamon, mainly the Kaikos Aqueduct,” Bellwald elaborated.

However, we still don’t know names and biographies of the Nabataean engineers who realized these projects in the ancient times and their life remains a mystery to us.

What is more important for us today is how to utilize their expertise in a region that is overburdened with high natality and lack of water resources. In that regard Bellwald maintains that the Nabataean runoff water collection systems could still nowadays serve as a model for water collection and storage in arid regions.

“There is no agriculture without water, either from natural precipitation like barley fields in Thugra, or from irrigation,” stressed Bellwald, adding that irrigation may tremendously change the appearance of a landscape and may have great, positive impact on the climate.

A center for wine and olive oil

Moreover, in ancient times Petra was a center for wine and olive oil production and wine and olive presses scattered in Petra and its hinterland are the evidence of ancient agriculture.

What the scholar explored were runoff water retention dams with an extended catchment basin and maintenance stairs leading from the wadi (valley) bottom to the top of the dam.

“Experimental archaeological trials I made in the Thugra area showed that with the Nabataean runoff water collection systems you may even get drinkable water,” Bellwald concluded.

Please visit the site: <https://www.greenprophet.com/2020/01/learning-the-art-of-ancient-irrigation-the-nabatean-way/>

BEADS FOUND IN 3,400-YEAR-OLD NORDIC GRAVES WERE MADE BY KING TUT'S GLASSMAKER

The burial sites from the Danish Bronze Age dated from 3,400 years ago provided beautiful glass beads as a special treat. They aren't just any old beads though.

They have actually turned out to have come from ancient Egypt, from the workshop that made the blue beads buried with the famous boy-king Tutankhamun.

This is not only a remarkable find, but also shows that trade routes between the far North and the Levant were established as early as the 13th Century BCE, which is an amazing discovery.

The stunning blue beads aren't the only evidence of trade between ancient Denmark and the region in question. Altogether, 271 glass beads have been found at 51 burials sites across Denmark with the majority originating from Nippur, Mesopotamia, which is about 50 km southeast of today's Baghdad in Iraq.

Out of all the beads which were unearthed, twenty-three of them were blue, which was a rare color back in ancient times. In the late Nordic Bronze Age, Lapis lazuli was the most precious gemstone and blue glass was the next best thing, according to Jeanette Varberg, who is associated with the research.

The woman was wearing a sun disc, a smart string skirt decorated with tinkling, small bronze tubes, and an overarm bracelet made of amber beads. Clearly, she had been quite a smart and potentially wealthy woman. Another one of the beads was found as part of a necklace in a separate burial site for another woman.

All 23 of the blue beads were analyzed using plasma-spectrometry, which is a technique that enables comparison of trace elements in the beads without damaging or destroying them but while still offering plenty of information.

A glass bead found in a 3400-year old Danish grave turns out to have come from ancient Egypt.

The results of the analysis showed that the blue beads buried with the women actually originated from the same glass workshop in Amarna that adorned King Tutankhamun at his funeral in 1323 BCE.

King Tut's golden deathmask contains stripes of blue glass in the headdress, as well as in the inlay of his false beard. This proves that there was some sort of trade link between the two areas at that time.

In ancient Egypt, Glass beads were a bit of a luxury adornment and were not prevalent, except in the graves of the elite where the selection was choice but limited in quantity. So, how did cobalt beads designed for Kings and Queens end up in Nordic burial sites?

Well, there is some speculation that the two ancient lands traded the luxury glass beads for amber, an element that Denmark is rich in.

Both the Egyptian and Mesopotamian glass beads which were found in the graves in Denmark suggest that there were trade routes already established 3,000 years ago.

It works the other way around too – Nordic amber has also been found as far south as in Mycenae, Greece and at Qatna, near Homs in Syria, suggesting that they were trading for one another's precious stones and beads.

Couple this with other finds such as Cypriot copper found in Sweden and picture of an elaborate trade system begins to form. In addition to this, Nordic amber beads, as well as beads made of Egyptian glass and copper ingots, formed part of the precious cargo of the ship which was wrecked at Uluburun, outside the coast of Turkey.

Please visit the site: <https://www.archaeology-world.com/beads-found-in-3400-year-old-nordic-graves-were-made-by-king-tuts-glassmaker/> [Go there for pix]

THE TREES GROWN FROM 2,000-YEAR-OLD SEEDS, BY SARAH ZHANG

These seeds were found in the same caves as the Dead Sea scrolls. Now they are flourishing as trees on a kibbutz.

Their names are Adam, Jonah, Uriel, Boaz, Judith, and Hannah, and their ages are—well, actually this one’s a bit complicated.

Adam, Jonah, Uriel, Boaz, Judith, and Hannah are date palm trees, and although they were all planted in recent years, the seeds from which they germinated all came from ancient archaeological sites. These seeds, according to radiocarbon dating, were around 2,000 years old.

They had waited two millennia to sprout.

The seeds of Judean date palms turn out to have remarkable longevity. A team led by Sarah Sallon, which planted these six trees, first tried in 2005 to germinate a 2,000-year-old seed from the ancient fortress of Masada. To the surprise and delight of Sallon and her colleagues, it sprouted, and they named that first date palm tree Methuselah, who in the Bible lived to the age of 969.

“I was so not expecting it,” says Sallon, a doctor at Hadassah University Hospital who got interested in date palms as medicinal plants. At the time, the team didn’t even think to take basic measurements, such as seed weight or size, for comparison to modern dates. So after the success of Methuselah, they decided to try again but more systematically. After all, was Methuselah a fluke, or were lots of date seeds viable after 2,000 years?

An archaeologist at Hebrew University allowed Sallon sift through dusty boxes of plant material recovered from some of Israel’s most famous archeological sites. She found plenty of seeds for her purpose.

“They were in all various stages of disintegration,” Sallon says. “But some were in beautiful condition.” She picked 32 of the best preserved seeds, and her collaborator Elaine Solowey planted them at a kibbutz in southern Israel. Solowey soaked the seeds in water and applied commercial plant hormones and fertilizer, but the protocol for planting them was essentially no different than for modern seeds.

Five of the six seeds that ultimately sprouted came from either Masada, site of a famous siege in 74 b.c. that is said to have ended with the mass suicide of its defenders, or from the Qumran caves, best known as the site of the Dead Sea scrolls. (A sixth came from caves at Wadi Makukh.) At 2,000 years old, the seeds are in fact contemporaries of these ancient events. Around the time Romans were laying siege to Masada and the Dead Sea scrolls were being written, these seeds were being formed.

“It’s quite remarkable this team of researchers managed to germinate seeds of that age,” says Oscar Alejandro Pérez-Escobar, who studies ancient dates at the Royal Botanic Gardens, Kew. The fact that the team has done it not just once but now seven times

suggests that ancient seeds could be used to resurrect genes that disappeared after thousands of years of breeding. “These ancient seeds might represent lost genetic diversity we don’t see any more,” says Pérez-Escobar. As date palm growers adapt to climate change and battle pests and diseases, they might want to tap into the pool of ancient genes hidden in archaeological archives.

Why date palm seeds can remain viable for so long, no one is quite sure. The seeds are physically tough and, because they are adapted to the desert, especially tolerant of drying out. But Sallon also pointed to the environment where they were found, near the Dead Sea. The Dead Sea is the lowest place on Earth’s land. That means it has an especially thick layer of atmosphere to protect from cosmic radiation that could damage the seeds.

To understand how Adam, Jonah, Uriel, Boaz, Judith, and Hannah are related to more modern date palms, the team also analyzed genetic markers from the seedlings. The seedlings were genetically quite different from one another. Methuselah and Adam were most closely related to eastern varieties now found in the Arabian gulf; Hannah and Judith to modern Iraqi varieties; and Uriel, Boaz, and Jonah to modern Moroccan varieties. The ancient seeds were also bigger and heavier than modern varieties.

Sallon helped name the seedlings. After Methuselah, she decided to continue with the Biblical theme. Adam sprouted in the fall, around Rosh Hashanah, the Jewish New Year, which celebrates the creation of the world and of Adam and Eve. She originally named the tree Eve, but switched to Adam after genetic markers revealed it was a male tree.

Judith came up a few months later, around Hanukkah, and was originally named Judah for the hero of the Hanukkah story, Judah Maccabee. Two more seedlings germinated around the spring harvest festival of Shavuot, when the Book of Ruth is traditionally read. So Sallon named those trees after Ruth and Boaz, Ruth’s second husband—until genetic analysis revealed Ruth was also male. So Sallon changed the name to Uriel, after, this time, her own son.

Methuselah is now mature enough to produce pollen, and he’s actually become a father. Solowey has used him to pollinate a modern female, and they made dates. The two female date palms from ancient seeds, Judith and Hannah, have not yet reached sexual maturity, so no ancient date fruits have been resurrected yet.

And even when they do, Sallon explained, the fruits they bear are unlikely to be identical to the ones that people grew and ate 2,000 years old. Once growers found a date palm with all the qualities they liked, they likely kept “cloning” that single palm by taking cuttings.

Farmers do the same thing today with apples and pears varieties today.

Sexual reproduction—crossing a male and female tree—scrambles genetic lineages and introduces uncertainties. It’s the same reason an apple seed from a Pink Lady at the grocery store is unlikely to yield perfect Pink Ladies when planted in your backyard. Ancient DNA can be resurrected, but recreating the exact taste of an ancient fruit would be much harder.

Please visit the site: <https://www.theatlantic.com/science/archive/2020/02/how-to-grow-a-date-tree-from-2000-year-old-seeds/606079/> [See also
<https://www.timesofisrael.com/israeli-researchers-grow-date-plants-from-2000-year-old-seeds/>

ANTHROPOMORPHIC FIGURINE CARVED FROM WILD ASS FOOT DISCOVERED IN ANCIENT CITY OF ÇATALHÖYÜK, BY HANNAH OSBORNE

A small, anthropomorphic figurine carved from the bones of the foot of a Asiatic wild ass has been discovered at the ancient site of Çatalhöyük, often dubbed one of the world's first cities. The figure is unique in that it is the first-ever carving made from bone with human-like features found at the site.

It was discovered in an area that was used to store food by Marek Z. Barański, from the Academy of Fine Arts in Gdańsk, who led the excavations in the area.

Çatalhöyük, Turkey, was a large settlement that was continuously occupied for over 1,000 years, between 7100 and 5900 B.C. At its peak, it is estimated to have been home to up to 8,000 people, according to UNESCO.

Studying the site has allowed archaeologists to understand many aspects of daily life during the Neolithic period. "At Çatalhöyük, animal domestication, daily subsistence strategies, the use of animal and plant products, burial practice, the construction of houses, and other issues have been studied for years," Kamilla Pawłowska, from the Adam Mickiewicz University in Poznań, Poland, told Newsweek.

Çatalhöyük is made up of two main mounds, known as the West Mound and the East Mound. Pawłowska and Barański first discovered the figurine in 2016 in the East Mound in an area that represents the later phase of occupation, from around 6,500 B.C. Pawłowska's work has focused on the relationship between humans and animals. She previously found that the later inhabitants of Çatalhöyük started to process food more intensely, possibly as a result of environmental stress.

Finding an anthropomorphic figurine made from the bones of an animal that would have been fairly scarce at the time could provide insight into life in Çatalhöyük toward the end of its occupation.

Details of the discovery and its significance were published in the journal *Archaeological and Anthropological Sciences*.

"The figurines found during previous studies at the site have different sizes and shapes, but are usually made of clay. Our figurine is made of bone material, and so we believe that the artifact has profound significance for our understanding of the figurine as an object along with animal use and technological processes," she said.

"A characteristic feature of this artifact is the coffee-bean shaped eyes, which make it into an anthropomorphic figurine; in fact, it resembles an 'idol', of a type especially well known in the Near East and in Iberia. The people who lived at Çatalhöyük were primarily involved in sheep herding, and used bone and antler as a raw material for manufacturing.

They knew which element from the entire animal skeleton to choose and had skills in bone manufacturing."

'Barański said where it was found—in a food storage room—is important.

"It is difficult to reconstruct the reason an artifact was made by people in the past," Pawłowska said. "However, we can shed light on the context of its finding and try to suggest the purpose of its uses."

Other similar artifacts are found at archaeological sites across Europe and the Near East, all with varying explanations. "Some of them are usually considered ritual objects, in contrast to others, which are believed to be gaming pieces or objects destined for the funerary context," she said, adding the latest finding expands this list.

"Given the lack of evidence, we have no reason to think that the domestic activities that might have taken place in the storage rooms held any symbolic or ritual connotations," Pawłowska said. "The exact purpose of their placement there remains unclear, as with most questions about the legitimacy of actions performed in the past, but we can suppose that inhabitants of Çatalhöyük linked them with food or food-related activity."

Please visit the site: <https://www.newsweek.com/catalhoyuk-ancient-city-figurine-donkey-bone-1485819> [Go there for pix]

MUD-BRICK VILLAGE SURVIVED 7,200 **YEARS IN THE JORDAN VALLEY,** **BY RUTH SCHUSTER**

Homes and silos identified at Tel Tsaf are a rare find given mud-brick's aversion to rain – and an unseasonably wet winter is already causing exposed bricks to fall apart.

There's a reason why prehistoric homes are rare in the archaeological record. Building stones get repurposed, while others were flimsy to begin with, being made of wood and straw, or mud-bricks that succumbed to weather and decay. Yet archaeologists in Israel have identified homes and food-storage silos made of sun-dried mud-brick going back 7,200 years in Tel Tsaf, a site in the Jordan Valley, Prof. Danny Rosenberg of the Zinman Institute of Archaeology, University of Haifa, who led the Tel Tsaf project together with Dr. Florian Klimscha from the Landsmuseum in Hanover, and colleagues report in PLOS One.

The mud-bricks were cemented and coated using plaster made of mud or lime (and other types too), the team wrote. Based on organic findings, they deduced that the ceilings may have been made of wood or reeds, and postulate based on modern simple architecture that the roofs were flat.

The structures at Tel Tsaf are far from being the oldest mud-brick known to science. Jericho has remnants of even older mud constructs dating to the period known as the Pre-Pottery Neolithic A, around 12,000 to 10,800 years ago. The denizens of ancient Jericho used mud-brick to heighten their city wall, much good it did them.

Other examples are legion: many biblical sites were also known for use of mud-brick, and Ebla in Syria had a massive mud-brick city wall up to 6 meters (20 feet) thick that probably dates to around the time of Tel Tsaf. Both have somewhat survived.

In short, mud-brick constructions were common in the Levant (and elsewhere). But archaeological study of the prehistoric development of building with mud – from the technique to what it might tell us about the people, their culture, their technology and their choices – has been hampered by the fact that mud-brick disintegrates in the rain.

That begs the question of how exactly the mud-bricks of a village, albeit a substantial one, survived anywhere in the Levant for more than a few years, let alone 7,200 years in Tel Tsaf's case. Although the Middle East has some quite harsh deserts, it isn't the Atacama, which gets literally zero rain. These days, precipitation in the Jordan Valley and Tel Tsaf averages about 200 to 250 millimeters (over 8 inches) a year, Rosenberg says.

Indeed, the walls' survival is especially astonishing given that the mud-bricks of Tel Tsaf were sunbaked, not hardened by firing, he notes. "But the fact is, they survived. We think it's because they were plastered not with lime but with mud plaster with various additives we are currently studying, and the villagers kept replastering them – inside, outside, on the roof," he suggests. In a word, maintenance.

In addition, the site of the village had to have become covered very rapidly, because even after all these years the excavators found some still-standing walls, he says. And now that Tel Tsaf is exposed to the elements – and the winter of 2019-2020 has been unusually rainy, by Israeli and Jordan Valley terms – the bricks are falling apart fast.

“We are seeing it before our very eyes,” Rosenberg says, and adds: “This one reason why, in the new project, we are trying to excavate as little as possible, although the amounts of first-hand and innovative data we are retrieving is enormous.”

The archaeologists also believe that disintegrating bricks were recycled – no good resource went to waste.

Once upon a time on the shore of a giant lake Back in the Middle Chalcolithic, Tel Tsaf was a large village sprawling over a hill south of the Sea of Galilee, just a few kilometers from Tel Beit She'an, who also had a layer more or less contemporary with Tel Tsaf. Its location explains why the villagers chose to build their homes and facilities of friable sun-dried locally available mud, liberally tempered with local plants, rather than hardy stones.

They didn't have any, that's why, Rosenberg and his colleagues explains to Haaretz. “There is no rock for building in that area in the Jordan Valley, only the sediment from the bottom of the ancient Lisan lake. The whole site is practically mud brick debris and remains of walls and installations made of mud,” Rosenberg says.

Tel Tsaf arose on what had been the bottom of a narrow, elongated prehistoric lake, Lisan, of which only two shrunken relics remain: the Sea of Galilee and the Dead Sea.

Lake Lisan existed between about 70,000 to 15,000 years ago, the time of the Ice Age. Much of Europe was covered in glacial ice, but in the Levant it was relatively wet. Come the Holocene, as ice retreated in the north, the Levant aridified.

Throughout Tel Tsaf's not-very-long lifetime – possibly as little as 500 to 700 years, a mere eyeblink in these parts – the people used the same “recipe” for their bricks, Rosenberg and the team deduced. The villagers tempered the mud with a lot of organic material, although the archaeologists are still working on discovering what material exactly.

The ostrich conundrum

The locals didn't import stone for building. That would have been enormously difficult given that latter-day beasts of burden such as the horse and donkey hadn't been domesticated yet, and the camel was unknown in the prehistoric Middle East.

But items in graves found at Tel Tsaf indicate that they did import some much lighter and very fine things. In fact, no other known site of this period exhibits long-distance connections of such dimension, Yossi Garfinkel of Hebrew University and his team wrote six years ago in Plos One.

Rosenberg concurs. One of the grave discoveries was of a middle-aged woman with 1,668 ostrich eggshell beads arranged in six rows around her waist. What was the source

of those beads? Were there ostriches in Israel in the Chalcolithic? Maybe there were, maybe there weren't. As Rosenberg points out, they have not found a single bone of ostrich, but did find over 2,500 beads from the hardy off-white eggshell. Eggshell-bead-making waste was also found. The evidence indicates that, for whatever reason, ostrich eggs were imported to Tel Tsaf, where they were worked into beads.

It bears adding that ostriches and other local versions of typically "African" fauna did once live in Israel but went extinct – whether because of overexploitation, habitat encroachment or climate change.

Moreover, the Tel Tsaf woman with the ostrich egg waistband had been buried under the floor of a mud-brick silo and had a copper awl, the earliest-known cast metal artifact found in the southern Levant. As previously reported by Garfinkel, Rosenfeld himself and others, that awl suggests cast metal technology reached the region as early as the late sixth millennium B.C.E. According to analysis, the ore originated far, far away – possibly the Caucasus.

The dating of the crude tool may indicate that cast metal technology was introduced to the southern Levant centuries before the onset of the full-blown Middle Chalcolithic, or Copper Age, they wrote previously in Plos One.

Other evidence of the village's long-distance trading ties, millennia before writing developed, include obsidian, also known as volcanic glass, that would have originated in Anatolia, Turkey, or Armenia; fragments of decorated ceramics from Mesopotamia; pretty green stones (not gemstones); and shells from everywhere conceivable – the Red Sea, the Mediterranean and even from the Nile River, Rosenberg says.

Barley economy

The Middle Chalcolithic period, when Tel Tsaf flourished, was pre-money. They had to have been bartering for these exotic imports, begging the question of what they had to give.

A clue may lie in its silos, Rosenberg explains: The village seems to have waxed fat on agriculture. In fact, Tel Tsaf made headlines in 2017 after the discovery of a 7,200-year-old clay model of a food-storage silo, which the archaeologists interpreted as a remnant from a ritual propitiating the gods to preserve the crops or harvest.

The real silos were also naturally made of mud-brick and may have had capacities of 15 to 30 tons of grain – storage capacity far beyond the possible needs of any given nuclear family. Food storage facilities are known from even earlier, the Neolithic period. But earlier examples discovered were smaller.

Separate work by Dr. Rona Avissar-Lewis on childhood in the prehistoric and biblical-era Levant suggests that nuclear families were no bigger than today's, with an average of probably about three children. This was not because of prescient contraception techniques, but because the child mortality rate was about 75 percent. Even if the whole clan lived together, how much could they eat? "The amount of storage is no less than amazing," Rosenberg says.

Asked how they could have waxed so fat from farming in an area with pitiful average precipitation a year, he explains that they had water aplenty from the Jordan River, local streams and springs. Also, the weather was warm: Blistering hot in summer, really, but plants do love the combination of warmth and water. So do mosquitoes, but such is life.

Apropos life, among the many discoveries at Tel Tsaf since its discovery in the 1950s are the bases of four large buildings built around courtyards – a popular Levantine style that persists to this day. While study of their diet continues, bones indicate avid consumption of the cow and the pig, distaste for which would only develop much later (apparently about 3,000 years ago).

When and why the peoples of the Levant ceased to dine on swine is not really known. Some postulate that the reasons may have less to do with divine thunderbolts and more to do with the dawning realization that chickens are scrumptious, easier to raise, need less water per kilogram, lay eggs – which pigs do not – and are easier to pick up and hustle away when the enemy comes marauding. Previous to these revelations, it seems the domestication of poultry was motivated mainly by the desire to bet on fighting roosters.

The archaeologists also found some evidence that the locals ate fish from the Jordan River. They also found a surprisingly large amount of olive pits, considering that the Jordan Valley climate is not supportive of olive trees. The small bitter fruits likely were also imported. Dr. Rosenberg is also looking into the diet of the Tel Tsaf villagers as possibly proto-Mediterranean diet.

The bottom line is that ancient Tel Tsaf seems to have been big, strong and filthy rich by the standards of the day. Yet while Jericho is touted as being one of the longest-surviving towns on Earth, Tel Tsaf was deserted after mere centuries. “Suddenly it was gone, we don’t know why,” says Rosenberg. “It’s part of the mystery. We don’t have a clue yet.” Stay tuned.

Please visit the site: <https://www.haaretz.com/archaeology/.premium-mud-brick-village-survived-7-200-years-in-the-jordan-valley-1.8498916> [Go there for pix]

ANCIENT HARBORS, SUNKEN SHIPS: SUPPORTING MARINE ARCHAEOLOGY IN OFF ISRAEL'S COAST

“The world’s oceans and seas are the last great frontier of archaeological exploration, and the Mediterranean Sea holds the oldest and most densely traversed maritime network in the world,” said Professor Thomas Levy in the Department of Anthropology at UC San Diego.

(February 18, 2020 / JNS) The University of California San Diego has announced a gift of more than \$1.3 million from the Koret Foundation to support joint research on marine archaeology between UC San Diego’s Scripps Center for Marine Archaeology (SCMA) and the University of Haifa’s Leon Recanati Institute for Maritime Studies in Israel.

The three-year award will facilitate scientific exploration of coastal environments in Israel, which offer the most sensitive deep-time records for how humans have adapted to climate and environmental change over the past 11,000 years. The relatively new field of marine archaeology offers new ways of investigating these issues through the ages. Through this collaboration, UC San Diego and the University of Haifa will deepen a long-term research and teaching collaboration along Israel’s Carmel Coast.

“The world’s oceans and seas are the last great frontier of archaeological exploration, and the Mediterranean Sea holds the oldest and most densely traversed maritime network in the world,” explained Professor Thomas Levy, distinguished professor in the Department of Anthropology at UC San Diego and co-director of SCMA. “This new California-Israel collaboration will provide students and faculty from both the U.S. and Israel with unique opportunities for original research concerning climate, environmental and culture change.”

Anita Friedman, president of the Koret Foundation, said “this partnership will further strengthen the bonds between the U.S. and Israel, reinforcing the close ties between our two countries to respond to some of today’s most pressing environmental issues.”

The Koret Foundation’s U.S.-Israel bridge-building Initiative aims to strengthen the U.S.-Israel relationship in diverse ways by supporting organizational collaborations, educational and humanitarian programs, as well as opportunities for cooperation and exchange. In addition to its support of this project, Koret has supported other high-level collaborations among Stanford University, UC Berkeley and Tel Aviv University, and the Rambam Medical Center. These academic collaborations both advance critical scientific research, while simultaneously creating opportunity for deep relationships to develop between leading scholars from Israel and the United States.

The collaboration between Recanati and SCMA, co-led by SCMA, has the potential to advance the study of climate and environmental science by utilizing the rich archaeology of the eastern Mediterranean. Israel’s Carmel Coast provides an exceptional case study for investigating these problems because of its rich, submerged cultural heritage.

Over the past century, Scripps Oceanography has developed cutting-edge research tools to study environmental change involving marine geology and geophysics, coastal processes, paleomagnetism, paleobiology and climate science. SCMA researchers will utilize these tools and work in tandem with the University of Haifa to create a state-of-the-art research facility in Akko, Israel, where qualified scientific diver students will come on annual field-school seminars.

“The Koret Foundation’s gift enables SCMA to marshal the excellence in marine and environmental science at Scripps Institution of Oceanography with more than 50 years of underwater archaeology expertise from the Leon Recanati Institute for Maritime Studies,” said John Hildebrand, distinguished professor of oceanography at Scripps and co-director of SCMA. “We see this as a unique opportunity to build up SCMA’s international presence, as well as to bring the tool-kit we develop home to San Diego and apply it off the beach here in La Jolla.”

Assaf Yasur-Landau, director of the Leon Recanati Institute for Maritime Studies at the University of Haifa, noted that “along the coast of Israel, submerged settlements, ancient harbors and sunken ships tell a unique story of 11,000 years of human resilience and adaptation. The exploration of this frontier can only be done with cutting-edge technologies and innovative training programs for archaeologists.”

Levy and Hildebrand anticipate that this joint project in Israel will have significant public and scientific impact, bringing to light new discoveries, including ancient shipwrecks and submerged villages, ports and cities from the past 10,000 years in the Mediterranean region.

Please visit the site: <https://www.jns.org/ancient-harbors-sunken-ships-supporting-marine-archaeology-in-off-israels-coast/>

HERE LIES THE SKULL OF PLINY THE ELDER, MAYBE, BY FRANZ LIDZ

The Roman admiral and scholar died during the eruption of Mount Vesuvius in 79 A.D. Might this really be his cranium?

Pliny the Elder's skull — or more accurately, his alleged skull — reposes in ghoulish splendor at the Museo Storico Nazionale Dell'Arte Sanitaria in Rome, a treasure trove of medical curiosities. The cranium has ruminated for decades in a display case, amid pathological and anatomical anomalies such as malformed fetuses and pickled liver stones. Scholars have long debated whether the relic once housed the brain of Pliny, the renowned admiral and author of a vast encyclopedia of Roman knowledge who died during the eruption of Mount Vesuvius in 79 A.D.

Over the last few years a pool of Italian biologists, anthropologists and geochemists conducted a series of forensic tests on the skull and accompanying lower mandible, which were unearthed 120 years ago on a shore not far from Pompeii. On Jan. 23 the scientists presented their findings at a conference in the museum. The skull, they concluded, squared with what was known about Pliny at his death, but the jawbone belonged to someone else.

Mary Beard, the Cambridge University classicist and reigning authority on Roman history, dismissed the finding out of hand. "I am 90 percent certain that this is fake news," she wrote in an email. Andrea Cionci, point man for the undertaking, conceded some ambiguity but remained firm.

"It is very likely that the skull is Pliny, but we cannot have 100 percent security," he said. "We have many coincidences in favor, and no contrary data."

Mr. Cionci is an historian best known for his biography of Evan Gorga, the lyric tenor who sang the role of Rodolfo in the world premier of Giacomo Puccini's "La bohème" in 1896. H.L. Mencken described the music of Puccini as "silver macaroni, exquisitely tangled," and like many Italian tales, the facts in the case of Pliny are as pliable as tubes of boiled pasta. To quote Pliny: "In these matters, the only certainty is that nothing is certain."

According to Mr. Cionci, the idea for Project Pliny came from a book — "Indagine sulla Scomparsa di un Ammiraglio," or "Inquiry On The Death of An Admiral" — written by military historian Flavio Russo and originally published by the Italian Navy in 2004. Mr. Russo, a Pliny fanboy, calls the commander's actions after the eruption "the oldest natural disaster relief operation."

Gaius Plinius Secundus, born around 23 A.D., was a polymath who believed that you could cure a cold by kissing the hairy muzzle of a mouse, that a pregnant woman who eats salty food will give birth to a child without fingernails and that "there is no greater cause for the destruction of morals and rise of luxury than shellfish." Whatever is known about his death comes down to us from a pair of Latin letters by his nephew, Pliny the Younger; these constitute the sole surviving eyewitness account of the eruption.

It was Pliny the Elder's fearsome intellectual curiosity that literally got him in hot water. He was staying at a villa in Misenum (modern Miseno), two dozen miles from the volcano, when his sister noticed a soaring, high-spreading cloud in the distance. She alerted him to this plume of smoke, which her son, 17-year-old Pliny the Younger, also observed.

"Having seen the cloud, Pliny the Elder decided he wanted to get closer to it to investigate," said Daisy Dunn, a classicist whose 2019 biography "The Shadow of Vesuvius" is the definitive guide to Plinydom. "He was, after all, author of a 37-volume book of natural history."

The Elder was also admiral of the emperor Titus's fleet, so he had a ship fitted out and was preparing to leave to sail closer to the cloud when he received a written message from a woman named Rectina. "She was asking him for help as she lived somewhere beneath Vesuvius and could not escape," Dr. Dunn said. "So, in that moment Pliny the Elder changed his plan." What began as a scientific pursuit turned into a rescue mission.

Admiral Pliny launched the other ships of the fleet and set out across the Bay of Naples. It was a perilous voyage, through a soft fall of ash and pumice, and at one point, with the sea growing wilder, a helmsman recommended they turn back. In Pliny the Younger's account, it was then that his uncle uttered the immortal words "Fortune favors the brave." The Elder put in where he could, at Stabiae, just south of Pompeii, and resolved to investigate. He died as a result of his commitment to field research, presumably asphyxiated by volcanic fumes. He was 56.

The story jumps ahead to 1900, when, during a burst of activity to unearth ruins preserved by the layers of ash, 73 skeletons were dug up near the beach at what was once Stabiae. One body bore gold bracelets with designs of vipers, a gold triple-strand necklace and a parazonium, a triangular dagger sheathed in seashells, with an ivory hilt. The skeleton was supine, its skull rested on a pillar. The landowner, Gennaro Matrone, had a hunch that these were the remains of Pliny the Elder (the Younger wrote of his uncle's body lying as if asleep on the day after the eruption), but his theory was laughed off in the press.

"Archaeologists argued that a Roman admiral would never have appeared so heavily bejeweled, like a cabaret dancer," Mr. Russo said. His own research indicated that it was customary for senior naval officers to wear such adornments.

Discouraged, Mr. Matrone sold off the jewels and reburied most of the bones, keeping just the dagger, the skull and the lower mandible, Mr. Russo said. Some 70 years ago, the artifacts were donated to the Museo Storico Nazionale Dell'Arte Sanitaria in Rome. Curators exhibited the objects — which conformed to those in a photo taken by Matrone — and hastily cataloged the cranium as "Pliny the Elder's skull." The claim on the tag was later hedged to read: "Skull from the excavations of Pompeii and attributed to Pliny."

In 2017, after Mr. Cionci chronicled the mystery in the Turin-based daily La Stampa, Project Pliny was launched. DNA sequencing and an analysis of cranial shape and sutures suggested that the skull fit the Elder's general profile. Still, Luciano Fattore, an

anthropologist and occasional lecturer at University of Naples “L’Orientale,” warned that the older the individual, the less reliable the age range. “On average, however, the data is compatible with the possibility that the skull was Pliny’s,” he said. “This is a process of clues, with very strong evidences.”

Mr. Cionci’s team was buoyed when examination of isotopes in the tooth enamel in the jawbone revealed that the owner could have grown up in Northern Italy, Pliny’s birthplace. Then came the deflating news that the jaw likely came from a man of North African ancestry who had died in his thirties.

Mr. Cionci speculates that Matrone played mix-and-match with the bones, borrowing the jaw from a skeleton of a slave who lived on Pliny’s estate and served as his bodyguard. A footnote in “The Shadow of Vesuvius” refers to an ancient rumor that Pliny was killed by a slave “whom he urged to hasten his death in the agonizing heat.” Mr. Cionci’s hypothesis raises the tantalizing possibility the unmatched set of bones is an amalgam of murderer and murdered.

Unsurprisingly, some prominent scholars are deeply skeptical of Project Pliny’s conclusions. Dr. Dunn, who has closely followed the developments, wondered why, if Pliny the Elder’s body had been found in a sleeping posture, his body had not been entombed.

“If this is the skull of Pliny the Elder, I’d be absolutely flabbergasted,” she said. “The science does not appear to have established that connection, and we cannot know for certain that the skull was found as described or rule out the possibility that it was positioned opportunistically to lend credence to the theory that it was his. It is a pity we can’t recreate the moment of its discovery.”

She quoted an idiom that Pliny coined in a recipe for a kind of antidote to poison: addito salis grano — with a grain of salt. “We’ve appropriated the phrase to mean read or take with caution,” she said.

In an email, Francesco Sirano, director of the Archaeological Park of Herculaneum, and who was not involved in Project Pliny, praised the effort for “bringing back within a solid scientific basis a debate closed too hastily” in the early 1900s. “The group of researchers is trying to derive the maximum of the results from the few archaeological and anthropological remains, also thanks to the help of new technologies.”

For his part, Mr. Cionci observed that new discoveries in history and science are often rejected by the establishment but over time become widely accepted. Then again, the modern medical community still has not come around to Pliny’s treatment for ulcers, which includes salt and honey, butter, smashed snails and the ashes of a cremated dog’s head.

Please visit the site: <https://www.nytimes.com/2020/02/14/science/pliny-archaeology-skull-vesuvius.html>

IS THIS NEFERTITI'S TOMB? RADAR CLUES REIGNITE DEBATE OVER HIDDEN CHAMBERS, BY JO MARCHANT

A new survey hints at a previously unknown space beyond Tutankhamun's burial chamber.

A radar survey around the tomb of Tutankhamun in Egypt's Valley of the Kings has revealed possible evidence of further hidden chambers behind its walls.

The findings — in an unpublished report, details of which have been seen by Nature — resurrect a controversial theory that the young king's burial place hides the existence of a larger tomb, which could contain the mysterious Egyptian queen Nefertiti.

Researchers led by archaeologist Mamdouh Eldamaty, a former Egyptian minister of antiquities, used ground-penetrating radar (GPR) to scan the area immediately around Tutankhamun's tomb. They report that they have identified a previously unknown corridor-like space a few metres from the burial chamber (see 'Chamber of secrets'). Their finding was presented to Egypt's Supreme Council of Antiquities (SCA) earlier this month.

The data are "tremendously exciting", says Ray Johnson, an Egyptologist at the University of Chicago's Oriental Institute in Luxor, Egypt, who wasn't involved in the research. "Clearly there is something on the other side of the north wall of the burial chamber."

The possibility of extra chambers beyond Tutankhamun's tomb has previously been investigated by several teams, often working with private companies. But they produced conflicting results, and many researchers have dismissed the idea. For example, Francesco Porcelli, a physicist at the Polytechnic University of Turin in Italy who led a GPR survey inside the tomb in 2017, insists that his data rule out the existence of hidden rooms connected with the tomb.

Egypt's lost queen

Eldamaty's team was investigating a theory that Tutankhamun's tomb, which was discovered in 1922 and is unusually small for a royal burial, contains extensive hidden chambers and perhaps even Nefertiti's missing resting place. Some Egyptologists believe that immediately before Tutankhamun's reign in the fourteenth century BC, Nefertiti, whose daughter was married to Tutankhamun, briefly ruled as pharaoh. Her tomb in the Valley of the Kings has never been found.

Ancient cities rescued from rubble, bit by bit The team detected a long space in the bedrock a few metres to the east, at the same depth as Tutankhamun's burial chamber and running parallel to the tomb's entrance corridor. The space appears to be around 2 metres high and at least 10 metres long.

It is not yet certain whether the space is physically linked to Tutankhamun's tomb, known as KV62, or if it is part of another nearby tomb. The researchers argue that its orientation, perpendicular to KV62's main axis, suggests that there is a connection, because unconnected tombs tend to be aligned at different angles.

But not everyone is convinced. Zahi Hawass, another former antiquities minister, says that using geophysical techniques to search for tombs in Egypt has previously raised false hopes and he argues that such work should not be pursued. GPR “never made any discovery at any site in Egypt”, he claims. Hawass is himself searching for new tombs, including that of Nefertiti, but using more conventional techniques.

He told Nature that in 2019, he excavated the area north of KV62 looking for tomb entrances, but found nothing.

Contested histories

The radar survey is the latest in a succession of investigations that have tried to confirm whether additional chambers exist — provoking much disagreement and conflicting results.

The new data are intriguing, says Nicholas Reeves, a British Egyptologist who has spent many years working in the Valley of the Kings. But the newly discovered feature is not where he was expecting — he had assumed that possible hidden chambers would continue north of Tutankhamun's tomb rather than turn to the right, as the data suggest.

However, Reeves, who first suggested the idea that there is an extension to KV62, still thinks Nefertiti will be found somewhere inside.

Divided by DNA: The uneasy relationship between archaeology and ancient genomics In a 2015 paper, he reported finding straight lines and cracks in the painted walls of Tutankhamun's burial chamber, which he suggested could indicate the presence of hidden doorways. In particular, he claimed that the far north wall of Tutankhamun's burial chamber isn't solid bedrock as previously understood, but is a false wall of a type commonly used by ancient Egyptian tomb builders to hide chambers beyond. From clues in the wall paintings themselves, Reeves concluded that there was a hidden occupant and that it was Nefertiti.

Following this report, Eldamaty, as antiquities minister, oversaw two GPR surveys of the tomb walls. One, conducted by a team from Japan, seemed to confirm the existence of hidden rooms. But a second team, sent by the US media company National Geographic, failed to replicate these results.

Eldamaty was replaced as antiquities minister in 2016. The following year, his successor invited two more teams to scan the area around KV62, in the hope of settling the debate. But the disagreements continued. One team, led by Porcelli, working inside the tomb, claimed to rule out the existence of hidden chambers beyond the walls of KV621. A second team — a geophysical survey company called Terravision Exploration, based in West Molesey, UK — was asked by the SCA to cut short its survey.

Yet Terravision's preliminary results — also from inside the tomb — suggested there was more to discover. So Eldamaty, who is now based at Ain Shams University in Cairo, says he was determined that the team should complete its investigation by scanning outside the tomb. “I never give up easily,” he says. The SCA approved a new application

and in June 2019, Eldamaty, Terravision and a team of engineers from Ain Shams University returned to finish their work.

However, interference from nearby air-conditioning units meant that the team was unable to collect definitive data for the crucial area directly north of Tutankhamun's burial chamber.

Eldamaty plans to submit a proposal to return and study the feature in more detail. It will be difficult to scan closer to the burial chamber without removing the air-conditioning units, says Terravision chief executive Charlie Williams. But he is confident that, by using a different antenna and taking readings closer together, he can pin down the shape and location of the void to within a few centimetres, and see where it leads.

“It has to be intact”

Other Egyptologists have responded to the finding with enthusiasm.

Johnson doesn't rule out the possibility of finding Nefertiti in the hidden space. But if the chamber turns out to belong to a different undiscovered tomb, he suggests it could hold Tutankhamun's wife Ankhesenamun, whose tomb has not been found.

Aidan Dodson, an Egyptologist at the University of Bristol, UK, is sceptical of Reeves's ideas about Nefertiti but backs the second-tomb theory, and suggests it might hold the remains of princesses from Tutankhamun's time. Whoever is inside, he says the find could be “amazingly significant” because this part of the valley has been sealed by a layer of ancient flood debris that also kept KV62 safe from looters for millennia. “It has to be intact.”

Reeves has high hopes, too. “If Nefertiti was buried as a pharaoh, it could be the biggest archaeological discovery ever,” he says. If the evidence continues to mount, he suggests, an international conference of experts should be convened to consider the next steps. Any physical investigation shouldn't be rushed, he says, because digging through the bedrock would be extremely difficult, and drilling through the north wall of the burial chamber would damage its priceless artwork.

References

Sambuelli, L. et al. J. Cult. Herit. 39, 288–296 (2019).

Please visit the site: <https://www.nature.com/articles/d41586-020-00465-y>

ARCHAEOLOGISTS DISCOVER LOST CITY THAT MAY HAVE CONQUERED THE KINGDOM OF MIDAS, BY LOUISE LERNER

Archaeologists from the Oriental Institute have discovered a lost ancient kingdom dating to 1400 B.C. to 600 B.C., which may have defeated Phrygia, the kingdom ruled by King Midas, in battle.

University of Chicago scholars and students were surveying a site with Turkish and British colleagues last summer in southern Turkey called Türkmen-Karahöyük, when a local farmer told them he'd seen a big stone with strange inscriptions while dredging a nearby irrigation canal the previous winter.

"We rushed straight there, and we could see it still sticking out of the water, so we jumped right down into the canal—up to our waists wading around," said Asst. Prof. James Osborne of the OI, one of the foremost centers of research on the ancient world. "Right away it was clear it was ancient, and we recognized the script it was written in: Luwian, the language used in the Bronze and Iron ages in the area."

Translated by OI scholars, the pronouncement boasted of defeating Phrygia, the kingdom ruled by King Midas, legendary ancient ruler said to have a golden touch.

Osborne said it appears the city at its height covered about 300 acres, which would make it one of the largest ancient cities of Bronze and Iron Age Turkey. They don't yet know what the kingdom was called, but Osborne said its discovery is revolutionary news in the field.

"We had no idea about this kingdom. In a flash, we had profound new information on the Bronze Age Middle East," said Osborne, an archaeologist who specializes in examining the expression of political authority in Iron Age cities.

"A marvelous, incredibly lucky find"

Working under the Konya Regional Archaeological Survey Project, Osborne and UChicago students were mapping the site as part of the Türkmen-Karahöyük Intensive Survey Project, located in an area littered with other famous ancient cities. Just by walking around the site's surface, they collected bits of broken pottery from three thousand years of habitation at the site—a rich and promising find—until the farmer's chance visit pointed them to the stone block known as a stele.

Osborne immediately identified a special hieroglyphic marking that symbolized the message came from a king. The farmer helped pull the massively heavy stone stele out of the irrigation canal with a tractor. From there it went to the local Turkish museum, where it was cleaned, photographed and readied for translation.

The hieroglyphs were written in Luwian, one of the oldest branches of the Indo-European languages. A unique language written in hieroglyphic signs native to the Turkish area, Luwian is read alternating between right to left and left to right.

While Osborne isn't an expert in reading the Luwian language, luckily he works down the hall from two of the foremost experts in the world on Luwian: OI colleagues Petra Goedegebuure and Theo P.J. van den Hout—editors of the Chicago Hittite Dictionary.

Their translation revealed that the stele king was called Hartapu, and Türkmen-Karahöyük was probably his capital city. The stone tells the tale of King Hartapu's conquest of the nearby kingdom of Muska, better known as Phrygia—home to King Midas. "The storm gods delivered the [opposing] kings to his majesty," the stone read.

Full view of the archaeological mound at Türkmen-Karahöyük. It appears the unknown city at its height covered about 300 acres. Credit: James Osborne

The OI's linguistic analysis suggested the stele was composed in the late-eighth-century B.C., which lines up with the time that Midas ruled.

It answers a long-standing mystery, though; not quite 10 miles to the south is a volcano with a well-known inscription in hieroglyphics. It refers to a King Hartapu, but no one knew who he was—or what kingdom he ruled.

Following a longstanding tradition of OI research in the area, Osborne is already planning the next site visit, hoping to complete the survey this summer.

"Inside this mound are going to be palaces, monuments, houses. This stele was a marvelous, incredibly lucky find—but it's just the beginning," he said.

Osborne worked with colleagues Michele Massa with the British Institute at Ankara, Fatma Şahin with Çukurova University, and Christoph Bacchuber with Oxford University of the Konya Regional Archaeological Survey Project to explore and survey the site.

Please visit the site: <https://phys.org/news/2020-02-archaeologists-lost-city-conquered-kingdom.amp> [Go there for pix]

WAS A PREHISTORIC ‘MAGEN DAVID ADOM’ FIXING LEGS 35,000 YEARS AGO?

BY ROSSELLA TERCATIN

Study on a child's fractured bones finds that individuals must have taken care of the injury, allowing the child not only to survive but even to recover from the fracture.

About 35,000 years ago, a child, probably a boy, who belonged to a hunter-gatherer group settled somewhere in northern Israel, was playing in the uncontaminated nature, fell and seriously hurt his foot. We will never know for sure if this is exactly what happened to the young person whose remains were uncovered at the Manot Cave in western Galilee. However, what the anthropologists found examining his foot bones sheds light on an extraordinary aspect of the life of a community that dates back to such a distant past.

As it is explained in a paper recently published in the Journal of Human Evolution, other individuals must have taken care of the injured child, allowing him not only to survive but even to recover quite well from the fracture, and to die a long time later for unrelated causes.

Such a testimony of the solidarity and mutual support that existed among humans who lived over 20,000 years before the agricultural revolution began is one of the most remarkable aspects of what has emerged from the foot excavated at Manot Cave, Dr. Hila May from the Department of Anatomy and Anthropology, Dan David Center for Human Evolution and Biohistory Research at the Tel Aviv University who led the study told The Jerusalem Post.

“We found the bones during several seasons of excavation at the Manot Cave. We came to the conclusion that they belonged to the same individual both because they were found in the same layer in proximity of each other and because, after we cleaned them, we realized that they perfectly matched,” May explained.

The scientists were able to ascertain that the young person had suffered from a fracture in his second metatarsal, but the fracture managed to heal and the individual died only a long time later.

“Foot injuries cause a lot of suffering since one cannot walk properly,” May pointed out, adding that the type of injury suffered from the prehistoric person is still common today, especially among athletes and children who procure it by simply falling. She added that even now it requires surgery or at least several weeks wearing a cast before the patient can go back to normal activity.

“This means that the community that this individual was part of supported him while he could not walk and gave him food. Because the fracture healed so well, we can even speculate that they managed to find a way to immobilize the foot for some time, the same way today someone would wear a cast,” May told the Post.

Even though they think that the person was a male, the scientists were not able to establish it for sure, since this information is very hard to determine by just looking at foot bones and they were not able to extract the DNA, as it is the standard in this kind of cases.

“In Israel DNA gets destroyed very fast because of the hot climate.

Moreover, extracting DNA from a foot bone it’s challenging, contrary to what happens with parts of the skeletons where there is more compact bone. Finding DNA from so long ago it’s in general extremely rare. We were not able to find DNA traces in any of the remains uncovered in Manot,” May explained.

They did however manage to estimate that the individual was probably between 15 and 20 years old.

“We know that around 15,000 years ago the average life expectancy for hunter-gatherers was about 30 years. Earlier on it might have been something similar or even shorter,” the evolutionary anthropologist said.

The Manot Cave discovery is not the first case in the world showing that our ancestors started to take care of the most vulnerable among them very early on, but it is still significant because very little remains known about these hunter-gatherer groups, and especially about their social behavior.

“We know they lived in small groups, composed by maybe a few dozen individuals, moving around according to food availability. Generally, we understand that men went hunting while women took care of gathering food and of the children,” the scholar further said.

About the young person’s remains revealed in Manot, the researchers even speculate that the body was placed there on purpose to be buried, potentially showing compassion not only for the weak, but also for the dead.

“The presence of several artifacts such as flint tools and shells brought from somewhere else may suggest that we are in the presence of an organized burial. However, we cannot prove it,” May pointed out.

When the archaeologists first came across the bones, excavating the site between 2014 and 2017, their first goal was to determine whether they belonged to a Homo Sapiens, or to a Neanderthal.

“We knew that in Israel at that time we had both. According to the shape and the size of the bone, we could establish that it belonged to a Homo Sapiens. However, we also found some Neanderthal traits,” the researcher told the Post.

Asked whether this could mean that mixed Sapiens-Neanderthal communities existed, she responded affirmatively: “We don’t know what was the pattern of their interaction, if females went to Neanderthal groups or maybe the opposite, but we know that modern humans interbred with Neanderthals, contrary to what was believed for many years,” May stated. “The fact that we see Neanderthal characteristics in the remains we found in

the Manot Cave means they were mating, they had kids together, even though they looked morphologically different.”

“We know that all homo sapiens who left Africa about 65,000 years ago had some Neandertal genes. It raises a very interesting question on how we define species,” May concluded.

Our ancestors, or at least some of them, cared for each other and were able to overcome physical and even genetic differences. Do we, their descendants living in the 21st-century, still have something to learn from them?

Please visit the site: <https://www.jpost.com/HEALTH-SCIENCE/Was-a-prehistoric-Magen-David-Adom-fixing-legs-35000-years-ago-618249>

TOMB OF ROME'S MYTHICAL FOUNDER **ROMULUS UNEARTHED,** **BY TOM METCALFE**

Does the discovery bolster the legend of Romulus and his twin brother?

A tomb that was buried thousands of years ago and revered by ancient Romans as the resting place of their city's mythical founder Romulus has now been rediscovered beneath the Forum in Rome.

The underground tomb and the temple built around it are thought to date from the sixth century B.C., according to archaeologists.

Ancient Romans believed the tomb held the remains of their city's founder, but the stone sarcophagus that archaeologists just found inside the tomb is empty.

The underground temple — called a "hypogeum" in Greek — contains a votive altar that was dedicated to Romulus, said Alfonsina Russo, the director of the Parco Archeologico del Colosseo, which oversees the city's ancient ruins.

The entrance to the tomb is hidden in the northwest of the Forum, underneath the building of the "Curia Julia," or Senate House, Russo told a news conference in Rome today (Feb. 21). The tomb itself would once have been beneath the "Comitium" — the central meeting place of the ancient city where votes by public assemblies were conducted, she said.

The tomb is also near the "Lapis Niger" — meaning "Black Stone" in Latin — an ancient shrine paved in black marble and thought to cause bad luck, with a stone block marking the spot where Romulus was said to have been murdered by jealous members of the Senate.

The temple was therefore "located in a highly symbolic place for the political life of Rome," Russo said.

The empty 4.5-foot-long (1.4 meters) sarcophagus in the tomb was made of a light volcanic stone, called tuff, quarried from the Capitoline Hill beside the Forum, she said.

Legendary founder

Romulus was the legendary founder of Rome said to have lived in the eighth century B.C. — but most historians think he did not exist in reality.

According to legend, Romulus and his twin brother Remus were the grandsons of Numitor, the deposed king of the Latin city of Alba Longa — the sons of his daughter, Rhea Silvia, and the war god Mars in human form.

When the new king of Alba Longa ordered the infants Romulus and Remus thrown into the Tiber, the story goes, they were instead abandoned on the river bank; there, they were rescued by a she-wolf, who raised them until they were found by a shepherd.

The entrance to the underground temple was found during excavations on the north-west side of the Roman Forum, beneath the steps of the Curia Julia on the center-left of this photograph. (Image credit: Jean-Christophe Benoist/CC BY 3.0)

In later years, Romulus and Remus restored their grandfather to the throne of Alba Longa and decided to build a new city overlooking the spot where they had been abandoned as infants. But, according to legend, they could not agree on which hill to build it, and Remus was killed by Romulus or his supporters in the argument.

Romulus established Rome on the Palatine Hill and became its first king; in later centuries, it became a republic led by the Senate, and then an empire.

The tomb of Romulus in the Forum became a mystical site for Romans, and it is mentioned by the ancient Roman historian Marcus Terentius Varro, Russo said.

The tomb was discovered in November beneath the steps of the Curia, by archaeologists investigating the work of the Italian archaeologist Giacomo Boni, who excavated the Lapis Niger shrine and the Comitium in the early 20th century, she said.

The underground site has now been documented with 3D laser scans, and the excavations will resume at the end of April, Russo said, when archaeologists will investigate more of the buried area.

Please visit the site: <https://www.livescience.com/sarcophagus-romulus-discovered.html> [See also <https://www.smithsonianmag.com/smart-news/possible-shrine-romulus-unearthed-roman-forum-180974240/>] [Go there for pix]

ON THE TÜRKMEN-KARAHÖYÜK EXCAVATIONS

Last week, the news of the discovery of a lost Iron Age kingdom in central Anatolia appeared first on the Chicago University News website and then quickly went viral on social media and online sites. Since the original article and subsequent reproductions mischaracterized the archaeological data and the role of the scientists involved, we offer this brief notice below to rectify the original article.

“The site of Türkmen-Karahöyük was systematically investigated in 2017 and 2018 by the Konya Regional Archaeological Survey Project (KRASP), co-directed by Michele Massa (British Institute at Ankara) and Christoph Bachhuber (Oxford University), with the assistance of Fatma Şahin (Çukurova University). In 2019, KRASP started a collaboration with Oriental Institute’s James Osborne to map the site in more detail with intensive sherd collection and drone photogrammetry, through the Türkmen-Karahöyük Intensive Survey (TISP).

The results of the 2019 season suggest that the centre may have reached an extremely large extent between the Late Bronze and Middle Iron Ages (ca 1400-600 BCE), likely exceeding 100ha. More excitingly, the recovery of a Hieroglyphic Luwian inscription at the site strongly suggests that Türkmen-Karahöyük may have been the capital of a king called Hartapu. The philological analysis of the text, conducted by Petra Goedegebuure and Theo van den Hout (Oriental Institute) dates it provisionally to the 8th century BCE. In the inscription, Hartapu claims to have conquered Muska, probably to be identified with the Iron Age kingdom of Phrygia. However, there is at present no archaeological or textual evidence that Hartapu actually invaded the Phrygian kingdom, nor that he was necessarily contemporary with Midas/Mita.

The 2020 season will complete the intensive survey project with a large-scale programme of geophysical prospections to better understand the size of the lower town.

For further information, please visit the KRASP website at:
<http://www.krasp.net/en/results/turkmen-karahoyuk/>

Please also visit the Oriental Institute webpage of TISP at:

<https://oi.uchicago.edu/research/projects/TISP>

You can find more details by watching two lectures posted on YouTube:

British Institute at Ankara lecture: <https://www.youtube.com/watch?v=6G39HGXoEbk>

Oriental Institute lecture: https://www.youtube.com/watch?v=2p6ROIGt6_Q

Three major articles related to the discoveries at Türkmen-Karahöyük are in press in the journal *Anatolian Studies*:

Goedegebuure P., van den Hout T., Osborne J., Massa M., Bachhuber C. and F. Şahin (in press). TÜRKMEN-KARAHÖYÜK 1: a new Hieroglyphic Luwian inscription from Great King Hartapu, son of Mursili, conqueror of Phrygia. *Anatolian Studies*.

Massa M., Bachhuber C., Şahin F., Erpehlivan H., Osborne J. and A.J. Lauricella (in press). A landscape-oriented approach to urbanisation and state formation in the Konya and Karaman Plains, Turkey. *Anatolian Studies*.

Osborne J., Massa M., Şahin F., Erpehlivan H. and Bachhuber C. (in press). The City of Hartapu: Results of the Türkmen-Karahöyük Intensive Survey Project. *Anatolian Studies*.

ARCHEOLOGISTS UNEARTH LOST TOWN FROM LITTLE-KNOWN ANCIENT EAST AFRICAN EMPIRE, BY KATIE HUNT

The international team of archeologists conducted excavations at the site in 2011, 2012, 2015 and 2016. The Kingdom of Aksum ruled over the region between 80 BC to AD 825 and was one of the ancient world's major powers — conquering surrounding regions and trading with the Roman Empire, the researchers said. The kingdom converted to Christianity in the 4th century. It was only in 2009 when archeologists spoke to local residents in the area near the discovery, who suggested the researchers investigate a hill near the modern village of Edaga Rabu. It turned out to be a 25-meter high mound formed by waste and debris accumulated over generations of occupation.

"It was part of the local oral tradition. They knew it was an important place but they didn't know why," said Michael Harrower, associate professor of archeology at Johns Hopkins University and lead author of the research, which was published in the journal *Antiquity* on Wednesday. Radiocarbon dating suggests people first started living in the town around 750 BC, and it remained occupied throughout Aksumite times, capturing key moments in Ethiopian history. The buildings and artifacts uncovered, which include a basilica, gold ring, coins, inscriptions and pottery, have revealed the region remained important throughout Aksumite times and the town of Beta Samati was a key hub of trade and commerce, linking the capital Aksum with the Red Sea and beyond. Today, the town lies near Ethiopia's border with Eritrea.

This Roman-style gold ring was found during the excavation. "The Empire of Aksum was one of the world's most influential ancient civilisations, but it remains one of the least widely known," Harrower said. "Beta Samati spans Aksum's official conversion from polytheism to Christianity and the rise of Islam in Arabia," he added. The archeologists uncovered the remains of a large basilica dating back to the fourth century.

An inscription in Ge'ez or ancient Ethiopic found just outside the eastern basilica wall. It is thought to read: Christ [be] favorable to us. Such buildings were key early places of Christian worship in Ethiopia, the study said, and the site at Beta Samati appears to be one of the first in the Aksumite kingdom, the researchers said — built shortly after King Ezana converted the empire to Christianity during the mid-fourth century AD. "That is what makes this discovery so important," said Aaron Butts, a professor of Semitic and Egyptian languages at Catholic University in Washington, DC, in an email. "The archeological data combined with the radiocarbon dating suggest that the basilica stems from the fourth (or perhaps early fifth) century, making it certainly among the earliest known churches in sub-Saharan Africa. In addition, given the reliability of the archeological data combined with the radio-carbon dating, it seems to be the earliest securely datable church in Sub-Saharan Africa," added Butts, who wasn't involved in the excavation.

Coins from Beta Samati featuring different Aksumite kings. Relics uncovered at the site showed Roman, pagan and Christian influences, illustrating the "cultural diversity of this enigmatic civilization," the study said. They included a gold Roman-style ring that

featured an unusual icon — a symbol of a bull and a soft-stone pendant recovered from outside the basilica with a cross and what appears to be an inscription in ancient Ethiopic that reads "venerable." Harrower said the ring was the most impressive and exciting artifact they found.

"Usually we are searching for scholarly information and scientific information, not necessarily for gold. But I frequently get asked by all sorts of people 'did we find any gold?' and, yeah, we actually did find some gold," he told CNN. "And it paints an important line of evidence. The ring looks very Roman in its composition and its style but the insignia of that bull's head is very African and is very unlike something you would find in the Mediterranean world and shows the kind of interaction and mixing of these different traditions." He said he hopes the ring would go on display locally at some point so the local community can benefit from the discovery.

Please visit the site: <https://menafn.com/1099711928/Archeologists-Unearth-Lost-Town-from-Little-known-Ancient-East-African-Empire> [Go there for pix]

COULD STUDYING ANCIENT INK HELP SHED NEW LIGHT ON THE DEAD SEA SCROLLS? BY ROSSELLA TERCATIN

The study of manuscripts offers scholars a treasure trove of information hidden in plain sight, complementing those presented by the texts themselves.

Could studying the ink used to pen the Dead Sea Scrolls help scholars shed light on the many mysteries still surrounding them?

According to Ira Rabin, senior scientist at the Federal Institute of Material Research and Testing (BAM) in Berlin and the Center for the Studies of Manuscript Cultures (CSMC) in Hamburg the answer is a resounding yes.

Ancient Jewish Sages were very well aware of the importance of ink in Jewish practice.

“As it was taught Rabbi Meir said: When I was with Rabbi Yishmael, I used to put iron sulfate into the ink [with which I wrote Torah scrolls], and he did not say anything to me. When I came with Rabbi Akiva, he prohibited me so,” reads a passage of Talmud in the Tractate of Eruvim (13a, William Edison Edition translation via Sefaria.org).

Several passages in the Bible mention the action or the need of writing something down. From those, the question of the Sages became what constitutes writing. Beginning at the time of the Mishna, the rabbis discussed the issue in several perspectives: from the fact that writing was an activity prohibited on Shabbat which therefore required a precise understanding to the characteristics of a kosher Torah scroll (fit for use for a public reading in the synagogue) as well as of other objects such as tefillin and megillah scrolls. The ingredients that could be employed to produce inks were also mentioned. A few centuries later, Moises Maimonides would systematically cover these issues in his Mishneh Torah.

Today, the study of manuscripts offers scholars a treasure trove of information hidden in plain sight, complementing those presented by the texts themselves, as Rabin explained to The Jerusalem Post after a workshop devoted to identifying and investigating historical ink types held at the National Library of Israel on Tuesday.

“The materiality of a manuscript is part of the manuscript itself and it offers a lot of information about the time, place, use and technological development of when it was created,” she explained.

The scholar pointed out that while the study of inks has been important in conservation for quite a while, especially because of the corrosive nature of certain types of ink, its understanding as an archaeological discipline is very recent.

“It has been developing basically in the past 10 years,” she noted.

At the workshop, she highlighted that the center where she works in Germany focuses on bridging the gap between the humanities, the natural sciences and technology and does so by assisting paleontologists, archaeologists and other scholars with their needs.

According to Rabin, much could be discovered by analyzing the Dead Sea Scrolls which are one of her areas of expertise. In her studies so far, she has especially focused on the parchments.

The Dead Sea Scrolls are a group of dozens of manuscripts dating back to a period between the 3rd century BCE and the 1st century CE that were uncovered in eleven caves near the site of Qumran. They include both manuscripts that are the most ancient known copies of parts of the Hebrew Bibles as well as other religious writings. They are currently kept at the Israel Museum in Jerusalem.

“The ink of the Dead Sea Scrolls has not been properly studied yet, and I hope that the Israel Antiquities Authority will allow it soon,” Rabin highlighted.

She explained that some of the manuscripts were analyzed in the Nineties, including one, Genesis Apocryphon, which was almost completely destroyed by the corrosiveness of the ink used, something very unusual, because corrosive types of inks appeared only much later on, in the Middle Ages.

“Most of the Dead Sea Scrolls were written in carbon ink, the most ancient ink on earth, in use since at least 2,000 BCE and up until today,” she pointed out, adding that carbon ink is created through a dispersion of carbon particles in a binder and is not corrosive.

“We do not know however, if other materials, and especially metals, were mixed in the ink as well in some of the manuscripts,” Rabin told the Post.

One of the questions that intrigues scholars in the field is why at some point, after using a certain type of ink for centuries if not millennia, people started to use other materials, an instance of which happened around the 3rd century BCE.

“I personally connect this event with the figure of Alexander The Great, who assembled a great empire and created a need for more ink.

Since carbon ink was expensive people started to adulterate it with other substances making similar ink but not as expensive,” Rabin said.

“I do think it is very important to further study the ink of the manuscripts of the Dead Sea Scrolls, because of the knowledge the materiality of the manuscripts can give us and because I hope very much to be able to produce a three-dimensional or four-dimensional socio-geographic map of the times and the places where people were using different inks from the 4th century BCE to the 6th/7th century CE,” the expert concluded.

Please visit the site: <https://www.jpost.com/Israel-News/Culture/Could-studying-ancient-ink-help-shed-new-light-on-the-Dead-Sea-Scrolls-618933> [Go there for pix]