



Επιστημονικό Σωματείο,  
Έτος Ίδρυσης 1982, έδρα:  
Κάνιγγος 27, 106 82 Αθήνα  
(Ένωση Ελλήνων Χημικών)  
<http://archaeometry.org.gr>

**ΔΟΙΚΗΤΙΚΟ  
ΣΥΜΒΟΥΛΙΟ:**

Γ. Φακορέλλης (πρόεδρος),  
Ι. Μπασιάκος (αντιπρόεδρος),  
Ε. Φιλιπάκη (γενική  
γραμματέας),  
Α. Οικονόμου (ταμίας),  
Μ. Παπαγεωργίου (ειδική  
γραμματέας),  
Μ. Καπαρού (μέλος),  
Ε. Κουλουμπή (μέλος)

**Πληροφορίες:**

Γ. Φακορέλλης (σύνταξη,  
επιλογή ύλης)  
**E-mail:** [yfacorel@uniwa.gr](mailto:yfacorel@uniwa.gr)

Scientific Association, Year  
of Establishment 1982,  
Headquarters: Kaniggos 27,  
106 82 Athens (Association  
of Greek Chemists)  
<http://archaeometry.org.gr>

**BOARD:**

Y. Facorellis (president),  
I. Bassiakos (vice-president),  
E. Philippaki (general  
secretary),  
A. Oikonomou (treasurer),  
M. Papageorgiou (special  
secretary),  
M. Kaparou (member),  
E. Kouloumbi (member)

**Information:**

Y. Facorellis (editor)  
**E-mail:** [yfacorel@uniwa.gr](mailto:yfacorel@uniwa.gr)

# Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

**- Οκτώβριος 2020 -**

**Quality is not an act, it is a habit.**

*(Aristotle)*

## Newsletter of the Hellenic Society of Archaeometry

**- October 2020 -**

**Nr. 235**

## **ΠΙΝΑΚΑΣ ΠΕΡΙΕΧΟΜΕΝΩΝ – TABLE OF CONTENTS**

### **ΣΥΝΕΔΡΙΑ – CONFERENCES/WORKSHOPS**

CALLS FOR PAPERS: "e-quality, participation, rights and values in the Digital Age", 19-22 Jan. 2021 .....	<b>page 4</b>
International <u>Web-Conference EuroMed 2020</u> dedicated on Digital Cultural Heritage Documentation, Preservation and Protection, 2 <sup>nd</sup> – 5 <sup>th</sup> November 2020, Cyprus .....	<b>page 7</b>
GeoRaman2020, news and update .....	<b>page 10</b>
12 <sup>th</sup> ICAANE Congress, 6-10 April 2021, University of Bologna, Italy .....	<b>page 12</b>
Annual Ceramic Petrology Group Conference November 9-12, 2020, Online Call for papers .....	<b>page 14</b>

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

ASCSA National Endowment for the Humanities Fellowships .....	<b>page 15</b>
[EXT]POST DOC OPPORTUNITY IN ITALY .....	<b>page 17</b>

### **ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS**

Molecules - Special Issue .....	<b>page 18</b>
[pxrf] Live XRF Webinar .....	<b>page 19</b>

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

INTCAL20 TREE RINGS: AN ARCHAEOLOGICAL SWOT ANALYSIS ...	<b>page 20</b>
Ancient cisterns in the Negev Highlands: Types and spatial correlation with Bronze and Iron Age sites .....	<b>page 21</b>
Mathematics, Administrative and Economic Activities in Ancient Worlds Why the Sciences of the Ancient World Matter 5 .....	<b>page 23</b>
The meaning of color in ancient Mesopotamia .....	<b>page 24</b>

### **ΕΙΛΗΣΕΙΣ - NEWS RELEASE**

Long-lost Phoenician figurines could reveal secrets to ancient cult, by Hannah Brown .....	<b>page 29</b>
From the Seabed, Figures of an Ancient Cult, by Joshua Rapp .....	<b>page 32</b>
The mud whisperers - Israeli Archaeologists Invent Disgusting but Effective New Way to Date Ancient Ruins .....	<b>page 34</b>
2,600-year-old wine 'factory' unearthed in Lebanon, by Tom Metcalfe .....	<b>page 37</b>

Photoreal Roman Emperor Project - 54 Machine-learning assisted portraits, by  
Daniel Voshart ..... **page 39**

Facial reconstruction reveals Egyptian 'mummy portrait' was accurate except  
for one detail, by Laura Geggel ..... **page 41**

Four-thousand-year-old textile mill unearthed in western Turkey ..... **page 43**



## **ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS**

### **CALLS FOR PAPERS: "E-QUALITY, PARTICIPATION, RIGHTS AND VALUES IN THE DIGITAL AGE", 19-22 JAN. 2021**

On behalf of the Association for Digital Humanities and Digital Culture (AIUCD), I would like to announce that the deadline for submitting proposals to the 10th edition of its annual conference AIUCD 2021 “DHs for society: e-quality, participation, rights and values in the Digital Age” is now set for 2nd October 2020.

The 10th AIUCD conference (UNIPI and CNR, 19-22 January 2021) aims to be a moment of study and reflection on Digital Humanities (DHs) as a privileged meeting place among different needs of contemporary society in research, politics, economics and everyday life, giving the humanist the role of interpreter and facilitator of change. Digital humanists, thanks to the knowledge and expertise acquired in recent years and experimented in numerous research activities, have been among the often silent protagonists of the change of society, pervaded by information technologies in continuous development.

For the conference, contributions are accepted that illustrate theoretical reflections on DHs, methodological aspects, project experiences, experimental results, strategies for the enhancement of research infrastructures, ethical issues and position statements.

While not excluding the possibility of presenting works on other topics concerning the varied aspects of DHs, interventions on the following topics are particularly requested:

#### **Digital public humanities**

Infosphere, digital school, changes in reading and learning, fight against digital illiteracy, characteristics and role of DH in relation to the real needs of society, public history, transversality, relationship between traditional disciplines and DH, the role of the digital humanist. The central question of this area is: with what effectiveness and with what purposes have DHs interacted and can or should they relate to the problems of contemporary society in the future? Area Chairs: Gino Roncaglia (Roma Tre) and Alessandro Lenci (UNIPI)

#### **Open culture**

Opportunities to access data, language resources, annotated text corpora, collections, archives, scientific publications, teaching resources, software, methodologies and technologies for the production, representation, conservation and enhancement of cultural heritage; replicability, sharing and dissemination of research empirical results; models and tools for the semantic representation and management of knowledge in the humanities; platforms for collaborative work and sharing of results.

The central question of this area is: how to operate to offer everyone the right opportunities in the world of research, training and sharing of cultural heritage?

Area Chairs: Roberto Delle Donne (UNINA) and Maria Chiara Pievatolo (UNIFI)

### **Social Networks**

Models and functioning of social networks, fake news and debunking, hate-speech, opinion mining, profiling systems, models for the diffusion of opinions, echo chamber; Internet safety and cyberbullying; analysis of mobility flows in territories; sociological and economic aspects of social networks; linguistic analysis in social media.

The central question of this area is: what are the emerging problems of social networks and what solutions can be proposed?

Area Chairs: Anna Monreale (UNIFI) and Arjuna Tuzzi (UNIPD)

### **Tech-economy**

Web economy, changes in the relations among production, capital and market intermediaries; antitrust legislation and regulations, old and new professions; digital sustainability; smart working.

The central question in this area is: how can the digital humanist help to write new rules and what training should the ruling class have to manage changes effectively?

Area Chairs: Luca De Biase (UNIFI) and Ginevra Peruginelli (CNR-IGSG)

### **e-Participation**

Experiences, research and open questions relating to technologies and their usability and accessibility to support communication with citizens, administration and the provision of services; support for decision-making and political processes; experiences of platforms for direct and participatory democracy; multilingual and multicultural digital resources; digital democracy and evolution of its key concepts in the passage of the millennium; infrastructures dedicated to participation at all levels; methodologies and tools for the digital inclusion and participation.

The central questions of this area are: under what conditions and with which methods is it possible for DHs to encourage citizen participation in decision-making processes? how can DHs facilitate communication between administrations and citizens?

Area Chairs: Flavia Marzano (LINK CAMPUS UNIVERSITY) and Giulia Venturi (CNR-ILC)

### **Assistive Technologies for Inclusion:**

Experiences and research in training, assistance and integration of disadvantaged categories, with special educational needs or learning disabilities; human-computer interaction, user experience, usability and accessibility, social entrepreneurship.

The central question in this area is: how do DHs provide tools for a fairer society, where citizens do not receive the same services indiscriminately (equality), but can instead enjoy services differentiated according to specific needs (equity)?

Area Chairs: Susanna Pelagatti (UNIFI) and Barbara Leporini (CNR-ISTI).

**Please find below the link to the complete call for papers:**  
<https://aiucd2021.labcd.unifi.it/en/call-for-papers-2/>

---

---

# **INTERNATIONAL WEB-CONFERENCE** **EUROMED 2020 DEDICATED ON DIGITAL** **CULTURAL HERITAGE DOCUMENTATION,** **PRESERVATION AND PROTECTION, 2<sup>ND</sup> –** **5<sup>TH</sup> NOVEMBER 2020, CYPRUS**

The newly established UNESCO and European Research Area (ERA) Chairs on Digital Heritage are announcing the International **Web-Conference EuroMed 2020** dedicated on Digital Cultural Heritage Documentation, Preservation and Protection

This unique conference is in cooperation with the European Parliament, the European Commission and the EU digital library Europeana and in collaboration with the prestigious publisher Springer-Nature to celebrate the 1.500.000 downloads of our publications.

Fourteen years of European – Mediterranean Conferences on Digital Heritage Documentation, Preservation and Protection (EuroMed): 2006 - 2020

In cooperation with:

The EU Research Infrastructures: DARIAH-EU ([MailScanner has detected a possible fraud attempt from "hfc-cyprus.eu" claiming to be www.dariah-eu](#)) European Research Infrastructure on e-Humanities and Art, CLARIN-ERIC ([www.clarin.eu](http://www.clarin.eu)) European Research Infrastructure for Language Resources and Technology, the H2020 ViMM-Plus project, the H2020 MSCA ITN CHANGE project (<https://change-itn.eu/>), the H2020 Impactour project (<https://www.impactour.eu/>), the EU OPHERA project (<https://ophera.beniculturali.it/en/1/home>), the Europeana Archaeology (<https://europeanaarchaeology.carare.eu/>), the Europeana Common Culture (<https://pro.europeana.eu/project/europeana-common-culture>), the EU Photoconsortium (<https://www.photoconsortium.net/>), the CARARE Consortium (<https://www.carare.eu/>) and the Michael-Plus Association (<http://www.michael-culture.eu/>) and others more...

Due to the COVID-19 pandemic and crisis around the World, all the authorities and governments are taking exceptional measures to avoid the spread of the disease and to keep the number of patients as low as possible. Even though these efforts and solidarity between all of us has led to improvements and containment and to confinement measures being lifted, the virus is still present and spreading across the world. For this reason, and given the persisting sanitary risks linked with an international gathering of several hundreds of experts, the EuroMed2020 Organising Committee decided, to organise this year conference fully online and to cancel the planned organisation of the traditional EuroMed conference, scheduled for November 2<sup>nd</sup> – 7<sup>th</sup>, 2020 in Nicosia, Cyprus (EuroMed2020).

We know that this decision will be appreciated and this was the best way to proceed during such an unprecedented situation.

Workshops - Open to all participants:

- The 2<sup>nd</sup> EU Workshop on how digital technologies can contribute to the preservation and restoration of Europe's most important and endangered cultural heritage sites:
  - Which technologies need to be developed to allow the creation of exact digital replica which must be of such definition and detail enabling their use for research and future preservation and reconstruction of damaged artefacts or sites?
  - Which standards need to be agreed upon so that the digitised material will be accessible (long term) to all through a single access point, also providing access to complementary material (images, books, descriptions, drawings) illustrating the cultural and historic significance of the sites.
  - Which algorithms have to be developed for the holistic documentation of the past (tangible and intangible).
  
- The 5<sup>th</sup> International Workshop on 3D Research Challenges in Cultural Heritage to be organized by the EU H2020 ERA Chair Mnemosyne project.

#### CALL FOR PAPERS

2<sup>nd</sup> – 5<sup>th</sup> November 2020; Cyprus

<http://www.euromed2020.eu>

**Paper submission deadline: 15<sup>th</sup> September 2020 (24:00 London-UK time)**

*Due to the pandemic Covid-19 the conference will be this year online and free of charge, however the [registration is mandatory](#)*

The 8<sup>th</sup> biannual European-Mediterranean (EuroMed-2020) conference is co-organised by the UNESCO and the EU ERA Chairs on Digital Cultural Heritage. It brings together multidisciplinary researchers, policy makers, professionals, fellows, practitioners and stakeholders to explore some of the more pressing issues concerning Cultural Heritage today. In particular, the main goal of the conference is to focus on interdisciplinary and multi-disciplinary research on tangible and intangible Cultural Heritage, using cutting edge technologies for the protection, restoration, preservation, massive digitalization, documentation and presentation of the Cultural Heritage contents. At the same time, the event is intended to cover topics of research ready for exploitation, demonstrating the acceptability of new sustainable approaches and new technologies by the user community, owners, managers and conservators of our cultural patrimony.

#### Topics and themes:

Researchers and practitioners willing to participate to the *Web-EUROMED 2020* conference are invited to submit papers on original works addressing the following subjects and research themes:

- I. DIGITAL HERITAGE DOCUMENTATION and PRESERVATION
- II. PROTECTION, RESTORATION AND PRESERVATION OF TANGIBLE AND INTANGIBLE CULTURAL HERITAGE

More detail information regarding the themes can be found at:  
<http://www.euromed2020.eu/index.php/call-participation>

#### Submission of Papers:



Submissions for the event are completely electronic through the on-line submission website available at <http://www.euromed2020.eu/index.php/paper-submission>

The conference accepts only original, unpublished work written in English which will be blind-reviewed and published [by the prestigious SPRINGER-NATURE LNCS](#).

We are soliciting two types of contributions:

1. PROJECT Research papers: they present new innovative research developments and results. They will feature a full-length oral presentation and will be published in a high-quality proceedings volume. Each submitted paper must not exceed 12 pages in total.
2. SHORT papers /Posters: they present preliminary ideas and works-in-progress. These papers will have a short oral presentation and will be also available as posters during the entire time of the event online. Each short paper must not exceed 8 pages in total.

The 10 best submitted papers will be published on a special issue of upcoming International Journal Heritage in the Digital Era.

**Please visit the site: [www.euromed2020.eu](http://www.euromed2020.eu)**

---

## GEORAMAN2020, NEWS AND UPDATE

Dear GeoRaman community,

taking in consideration the special circumstances due to the COVID pandemic, the organizing committee of the GeoRaman conference in agreement with GRISAC and the Scientific committee has decided to cancel the GeoRaman 2020 conference in Bilbao. We have been awaiting encouraging news about the evolution of COVID pandemic until the last minute in order to take the best decision. Unfortunately COVID is still there, there are people with no possibility to travel and the common sense says that there are no possibilities of organizing a face-to-face conference.

**But we have GOOD NEWS.** The cancellation of the conference is not the end of GeoRaman this year, and with the intention of maintain the spirit of GeoRaman community Wiley office and Journal of Raman spectroscopy office have said yes to an special issue of GeoRaman 2020. To fulfill the requirements and the high standards of the Journal, GeoRaman 2020 will follow these next steps:

- 1.- To have an official book of abstract (with ISBN) with the abstract already submitted, and we will open the submission process again to give the opportunity of participation to all those scientists that did not submit anything because of the pandemic. There would be a little charge to cover the management of the book of abstract, paid the ISBN, etc.
- 2.- There would be a process of checking to verify that the abstracts have enough quality and they will be ranked. The abstract best ranked in the book of abstract could be submitted as a paper to the special issue.
- 3.- The special issue will be published in 2021. This is mandatory. This means that we have to be very responsible with the procedures (deadlines).

If you did not send an abstract because of the pandemic and because you thought that you could not attend the conference, you have the chance to send a contribution to appear in the book of abstract, and then have the chance to submit you work to the special issue in the Journal of Raman Spectroscopy. The deadline for new abstract submission is September 20th. The instructions are available in the webpage

<https://www.ehu.eus/en/web/georaman2020>

Organizing committee

\*\*\*\*\*

Dr.Kepa Castro Ortiz de Pinedo  
Analytical Chemistry Department  
Faculty of Science and Technology  
University of the Basque Country  
Barrio Sarriena s/n  
48940, Leioa, Bizkaia, Spain

Phone: +34 94 601 5895

Fax: +34 94 601 3500

[www.kimika-analitikoa.ehu.es/s0171-giibehom/es/](http://www.kimika-analitikoa.ehu.es/s0171-giibehom/es/)

Artículo 22 de la ley de la ciencia. Solución para  
los investigadores YA

\*\*\*\*\*



## **12<sup>TH</sup> ICAANE CONGRESS, 6-10 APRIL 2021,** **UNIVERSITY OF BOLOGNA, ITALY**

The 12<sup>th</sup> ICAANE Congress ([www.12icaane.unibo.it](http://www.12icaane.unibo.it)) has been rescheduled to April 2021 from its original April 2020 date because of the Covid-19 pandemic. While we have all experienced in these months considerable restrictions to our professional and personal lives, we believe that, keeping safety as our first and foremost concern, it is important to start to reconnect our scientific community and begin to imagine and reflect together, communicating policies and practices within a changed (and ever more challenging, in the context of the current pandemic) landscape.

The 12<sup>th</sup> ICAANE will be carried out both in presence and remotely (only for registered participants) during the week from 6<sup>th</sup> to 10<sup>th</sup> April 2021. Of course, attendees will be subject to the precautionary limitations that health regulations require in terms of social distancing and reduced capacity of classrooms (we will strictly follow the guidelines (<https://www.unibo.it/en/university/covid-19-The-measures-adopted-by-the-University-of-Bologna/information-about-the-contagion-and-the-protection-of-our-communitys-health>) which will be in place in April 2021 for the University of Bologna).

The use of a face mask will be mandatory at all times, hand sanitizers will be placed on multiple spots and speakers will be required to use a new pair of gloves during each presentation. The welcome cocktail will be held in an open space with strict observation of social distancing, coffee breaks are guaranteed through the distribution of individual bags, while the social dinner is canceled.

On top of the funds collected through fees, we are investing also considerable resources into a live streaming website and equipment and into the open access publication of proceedings with Harrassowitz. 15 classrooms functioning in parallel will allow speakers to present, with copyright protection, their papers to both the in-person and virtual audience of registered participants. Discussions moderated by the session chairperson will be possible (remote questions via chat only). All speakers will be required to send also a video of their presentation as a further precaution against their own internet connection failures (detailed instructions will be circulated later on).

Posters will be presented into a virtual classroom and they will be available for download, with a prior registration into the SocArXiv (<https://osf.io/preprints/socarxiv>) database for intellectual protection. Poster authors will have the possibility discuss their work with participants within this digital environment. Printed posters may be exhibited as well in addition to the digital version.

Check the page (<https://eventi.unibo.it/12icaane/prizes>) for the announcements of cash prizes offered to registered participants.

We please ask colleagues wishing to update their abstracts and/or titles to do so by December 1<sup>st</sup> 2020 at the latest. Participants will need to specify if their attendance will be either remote or in person by March 5<sup>th</sup> 2021. With the rescheduling, a limited additional call for papers has been established following the requests which we received. An addition of up to 40 new papers will be allowed into the program. Interested scholars

may send a request and an abstract before November 1st, 2020 to [12icaane@unibo.it](mailto:12icaane@unibo.it) and, if accepted, they may then pay the registration fee in order to reach confirmed status.

We look forward to finally welcoming, either remotely or in person, all participants next year in Bologna and we send you our warmest regards

The 12<sup>th</sup> ICAANE Organizing Committee

Pierfrancesco Callieri, Maurizio Cattani, Enrico Cirelli, Antonio Curci, Anna Chiara Fariselli, Henning Franzmeier, Elisabetta Govi, Mattia Guidetti, Simone Mantellini, Gianni Marchesi, Nicolò Marchetti (Chair), Palmiro Notizia, Adriano V. Rossi, Marco Zecchi

---

---

**ANNUAL CERAMIC PETROLOGY GROUP**  
**CONFERENCE NOVEMBER 9-12, 2020,**  
**ONLINE CALL FOR PAPERS**

The Annual Ceramic Petrology Group Conference will take place online from November 9-12, 2020, sponsored by the Pitt-Rivers Laboratory for Archaeological Science at the McDonald Institute for Archaeological Research. We invite papers and posters on all aspects of ceramic analysis from any archaeological period and part of the world. We are aiming for approximately 2 hour sessions each day and to make the time slots friendly to researchers around the world. Feel free to forward to your departments/anyone you think may be interested.

Please submit your abstracts (max. 250 words) to [cpgmeeting2020@gmail.com](mailto:cpgmeeting2020@gmail.com) by the 5th of October 2020. Any questions can also be submitted to that email as well. Registration will be sent around following the close of the call for papers.

Carmen Ting  
Michael Lewis  
Kyra Kaercher  
CPG 2020 Organizing Committee

---

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

**ASCSA NATIONAL ENDOWMENT FOR THE**  
**HUMANITIES FELLOWSHIPS**

**Deadline: October 31, 2020**

Founded in 1881, the American School of Classical Studies at Athens (ASCSA) is a premier resource in Greece for American scholars in the fields of Greek language, literature, history, archaeology, philosophy, and art, from pre-Hellenic times to the present. It offers two major research libraries: the Blegen, with over 113,000 volumes dedicated to the ancient Mediterranean world; and the Gennadius, with over 146,000 volumes and archives devoted to post-classical Hellenic civilization and, more broadly, the Balkans and the eastern Mediterranean. The School also provides centers for advanced research in archaeological and related topics at the Athenian Agora and Corinth excavations, and at the Malcolm H. Wiener Laboratory for Archaeological Sciences. By agreement with the Greek government, the ASCSA is authorized to serve as liaison with the Hellenic Ministry of Culture and Sports on behalf of American students and scholars for the acquisition of permits to conduct archaeological work and to study collections.

Since its inception in 1994, the National Endowment for the Humanities (NEH) Fellowship program at the ASCSA has demonstrated its effectiveness by supporting projects for 60 scholars with distinguished research and teaching careers in the humanities.

**Eligibility:** Postdoctoral scholars and professionals in all fields relevant to the mission of the ASCSA who are US citizens, or foreign nationals who have lived in the US for the three years immediately preceding the application deadline. Applicants must already hold their Ph.D. or have completed all requirements, except for the actual conferral of the degree, by the application deadline.

**Terms:** Two to four fellows will be selected for awards of 4, 5, or 9 months duration. The monthly stipend per fellow is \$4,200 allocated from a total pool of \$75,600 per year. Applicants should indicate their preference for the length and dates of tenure of the award to coincide with the American School's academic year: 9 months, Sept. 2021-beginning of June 2022; 4 months, Sept. - Dec.; 5 months, January to the beginning of June. School fees are waived, and the award provides lunches at Loring Hall five days per week. The NEH Fellow will pay for travel costs, housing, residence permit, and other living expenses from the stipend. A final report is due at the end of the award period, and the ASCSA expects that copies of all publications that result from research conducted as a Fellow of the ASCSA will be contributed to the relevant library of the School. The NEH Fellow is also required to send one copy of all books and electronic copies of articles directly to the NEH.

NEH Fellows should use the American School of Classical Studies at Athens as their primary research base, but research may be carried out throughout Greece.

Application: Submit Senior “Associate Membership with Fellowship” Application online on the ASCSA web site by October 31. Link to application: <https://ascsa.submittable.com/submit/115299/associate-membership-with-fellowship-application>

The following items should be included in the application submitted online on the ASCSA web site:

1. Short abstract of the project (up to 300 words).
2. A statement of the project (up to five pages, single spaced), including desired number of months in Greece, a timetable, explicit goals, a selected bibliography, the importance of the work, the methodologies involved (where applicable), and the reasons it should occur at the ASCSA.
3. Current curriculum vitae. If not a US citizen, state US visa status /date of residence.
4. Names of three recommenders who are individuals familiar with applicant’s work and field of interest. Include a list of names, positions, and addresses of the referees. Instructions for recommenders to submit letters will be sent through the application portal. Please make sure your recommenders have submitted their letters by November 4. These letters should comment on the feasibility of the project and the applicant's ability to carry it out successfully.

The following criteria will be used by the Selection Committee when considering applications.

1. Are the objectives and approaches clearly stated and coherent?
2. Will the project result in an important and original contribution?
3. Are the research perspectives and methodologies appropriate?
4. Is the projected timetable reasonable for the tenure of the fellowship?
5. What resources are necessary? Does the ASCSA provide resources that are not available at the home institution?
6. Will residence in Greece contribute substantially to the success of the project?

**Web site:** [www.ascsa.edu.gr](http://www.ascsa.edu.gr) or <https://www.ascsa.edu.gr/apply/fellowships-and-grants/postdoctoral-and-senior-scholars>

**E-mail:** [application@ascsa.org](mailto:application@ascsa.org)

The awards will be announced during February. Awardees will be expected to accept the award within two weeks of notification of funding, but no later than March 1.

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

---



## [EXT]POST DOC OPPORTUNITY IN ITALY

Dear all,

There will be a post-doc position available soon at the Department of Maths and Physics (Università della Campania "Luigi Vanvitelli", Caserta). The project title is "Verification of fossil CO<sub>2</sub> emission from waste incinerators". The specific objective is to determine the fractions of fossil and biogenic CO<sub>2</sub> by measurements of <sup>14</sup>CO<sub>2</sub> in flue gas from the waste-to-energy (incinerator) plant located in Acerra (Campania) and managed by the A2A Energia company. However, the project is part of a plan to develop <sup>14</sup>C-CO<sub>2</sub> measurements on air samples at ambient CO<sub>2</sub> concentration at the CIRCE lab (Centre for Isotopic Research on the Cultural and Environmental heritage).

The call will be out in the next few weeks. The interview should be in mid-November and the position should start in December. The ideal candidate has a PhD in Environmental Science, Physics, Chemistry or any other similar scientific sectors, and has worked with <sup>14</sup>C and CO<sub>2</sub> fluxes.

If anyone is interested, please contact [mauro.rubino@unicampania.it](mailto:mauro.rubino@unicampania.it)

Thank you

Fabio

\*\*\*\*\*

**Prof. Fabio Marzaioli, Ph.D**

Associate Professor in Applied Physics

Università degli Studi della Campania "Luigi Vanvitelli"

Department of Mathematics and Physics



Head of Isotope Ratio Mass Spectrometry Services

Tel: +390823274661/4814 int 28

Fax: +390823274605

\*\*\*\*\*

---

## **ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS**

### **MOLECULES - SPECIAL ISSUE**

Dear Colleagues,

We are pleased to invite you to submit a paper for the Special Issue on \*Physical Chemistry in Cultural Heritage\* to be published in "Molecules".

The deadline for manuscript submission is \* 30 April 2021\*. You may send your manuscript either now or by the deadline. Once the submission is received, we will proceed it further. For more details, please visit the website: [https://www.mdpi.com/journal/molecules/special\\_issues/Physical\\_Heritage](https://www.mdpi.com/journal/molecules/special_issues/Physical_Heritage).

Molecules is an international, peer-reviewed and open access journal devoted to many area of Chemistry, published monthly online by MDPI.

A first decision can be provided to authors within \*approximately 17 days\* after submission.

We would also appreciate it if you could forward this to your team members and colleagues who may also be interested in the topic.

Thank you for your consideration and please do not hesitate to contact us if you have any questions or suggestions.

We look forward to hearing from you.

Maria Luisa Saladino and Francesco Armetta  
STEBICEF Department, University of Palermo, Italy

\*\*\*\*\*

Associate Professor of Physical Chemistry (CHIM/02)  
STEBICEF Department - University of Palermo  
Viale delle Scienze, Bld. 17, 90128 Palermo (Italy)  
phone: +39 091 23897957  
skype: maria.luisa.saladino  
<https://www.unipa.it/persona/docenti/s/marialuisa.saladino/>  
**ORCID:** <https://orcid.org/0000-0002-7481-8556>

\*\*\*\*\*

## **[pXRF] LIVE XRF WEBINAR**

In case anyone is interested, or has students/colleagues who may benefit, I am doing an XRF webinar for museum conservation on Saturday, October 3rd, at 12.30pm EST/9.30am PST.. If you are interested in participating (Zoom), sign up here: <https://forms.gle/YMK3yZo3UF2WUGNG6>.

Feel free to share to anyone who may be interested. I know the workshops we used to do have been on hiatus since the coronavirus pandemic began, so we're hoping this will help catch anyone up on how to use an XRF who needs to learn. This workshop is sponsored by the National Endowment of the Humanities and the University of Northern Colorado.

Lee

**Visit the pXRF for Cultural Heritage website at:**  
<https://sites.google.com/site/pxrfgroup/>

---

## **ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS**

# **INTCAL20 TREE RINGS: AN ARCHAEOLOGICAL SWOT ANALYSIS**

Radiocarbon, Vol 00, Nr 00, 2020, p 1–34  
DOI:10.1017/RDC.2020.77© Crown Copyright.

Published by Cambridge University Press on behalf of the University of Arizona.  
This is an Open Access article, distributed under the terms of the Creative Commons Attribution licence (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted re-use, distribution, and reproduction in any medium, provided the original work is properly cited.

Alex Bayliss<sup>1,2\*</sup>, Peter Marshall<sup>1</sup>, Michael W Dee<sup>3</sup>, Michael Friedrich<sup>4</sup>, Timothy J Heaton<sup>5</sup>, Lukas Wacker<sup>6</sup>

<sup>1</sup>Historic England, 25 Dowgate Hill, London, EC4R 2YA, UK

<sup>2</sup>Biological & Environmental Sciences, University of Stirling, Stirling, FK9 4LA, UK

<sup>3</sup>Centre for Isotope Research, University of Groningen, Nijenborgh 6, 9747 AG Groningen, The Netherlands

<sup>4</sup>University of Hohenheim, Hohenheim Gardens (772), D-70599 Stuttgart, Germany

<sup>5</sup>School of Mathematics and Statistics, University of Sheffield, Sheffield S3 7RH, UK

<sup>6</sup>Laboratory of Ion Beam Physics, ETH Zürich, Otto-Stern-Weg 5, 8093 Zürich, Switzerland

### **ABSTRACT**

We undertook a strengths, weaknesses, opportunities, and threats (SWOT) analysis of Northern Hemisphere tree-ring datasets included in IntCal20 in order to evaluate their strategic fit with the demands of archaeological users. Case studies on wiggle-matching single tree rings from timbers in historic buildings and Bayesian modeling of series of results on archaeological samples from Neolithic long barrows in central-southern England exemplify the archaeological implications that arise when using IntCal20. The SWOT analysis provides an opportunity to think strategically about future radiocarbon (<sup>14</sup>C) calibration so as to maximize the utility of <sup>14</sup>C dating in archaeology and safeguard its reputation in the discipline.

**KEYWORDS:** accuracy, calibration, dendrochronology, IntCal, precision, replication.

Please visit the site: [https://www.cambridge.org/core/services/aop-cambridge-core/content/view/3B0B6B44E8ADDE2AF2AFD2D2935C45A8/S0033822220000776a.pdf/intcal20\\_tree\\_rings\\_an\\_archaeological\\_swot\\_analysis.pdf](https://www.cambridge.org/core/services/aop-cambridge-core/content/view/3B0B6B44E8ADDE2AF2AFD2D2935C45A8/S0033822220000776a.pdf/intcal20_tree_rings_an_archaeological_swot_analysis.pdf)

# **ANCIENT CISTERN IN THE NEGEV HIGHLANDS: TYPES AND SPATIAL CORRELATION WITH BRONZE AND IRON AGE SITES**

G. Ore<sup>a,\*</sup>, H.J. Bruins<sup>b</sup>, I.A. Meir<sup>c</sup>

<sup>a</sup> Desert Studies, Kreitman School for Advanced Graduate Studies, Ben-Gurion University of the Negev, Beer Sheva, Israel

<sup>b</sup> Ben-Gurion University of the Negev, Jacob Blaustein Institutes for Desert Research, Sede Boker Campus, Israel

<sup>c</sup> Desert Architecture and Urban Planning, Dept. Structural Engineering, Faculty of Engineering Sciences, Ben-Gurion University of the Negev, Beer Sheva, Israel

Keywords: Negev desert, Cisterns, Spatial analyses, Bronze Age, Iron Age, Geoarchaeology

Journal of Archaeological Science: Reports, Volume 30, April 2020, 102227  
<https://doi.org/10.1016/j.jasrep.2020.102227>

## **ABSTRACT**

Extensive archaeological surveys have been conducted in recent years in the Negev desert region. The present research focusses on the central Negev Highlands north of the Makhtesh Ramon erosion cirque. The density of settlement sites in this area during the Bronze and Iron Ages is surprising in view of the absence of permanent water sources. Water is of course the primary and critical precondition for settlement and survival. The lack of springs necessitated water-harvesting of local rainfall for drinking water, by means of ingenious runoff capture in cisterns. Four types of cisterns occur in the region: (a) open cisterns dug in soft clayey marl, (b) bell-shaped cisterns (c) small bowl shaped cisterns and (d) roofed cisterns. The latter three types were hewn in hard limestone or chalk. This article deals in particular with the so-called open cisterns and the problem of their archaeological association and age. The time of construction of these cisterns has often been presumed to relate to the Iron Age. However, such a suggested association ignores the large number of Bronze Age sites in the area and the question of their water supply. The latter sites belong to the Early Bronze Age and/or the Middle Bronze Age I. This investigation evaluates for the first time by means of spatial analyses the distribution of cistern types and their association with settlements of various archaeological periods. Nine archaeological survey maps, each covering an area of 10 X 10 km, were included in this spatial analysis. Hence the total study area comprises 900 km<sup>2</sup>. The results show that open cisterns are not common at elevations below 600 m in the Negev Highlands. Many open cisterns are concentrated along a linear axis north of the Makhtesh Ramon erosion cirque, which is not the case for other cistern types. The average distances of all Bronze and Iron Age sites around the cisterns were evaluated. The open cisterns show a clear spatial correlation with Bronze Age sites, in particular with sites inhabited during both the Early Bronze Age and Middle Bronze Age I.

**Please visit the site:**

<https://www.sciencedirect.com/science/article/pii/S2352409X19302573?via%3Dihub>

---

---

## **MATHEMATICS, ADMINISTRATIVE AND ECONOMIC ACTIVITIES IN ANCIENT WORLDS WHY THE SCIENCES OF THE ANCIENT WORLD MATTER 5**

Michel, Cécile, Chemla, Karine (Eds.)  
Cham: Springer, 2020, 566 p.  
ISBN 978-3-030-48388-3  
Hardcover 114,39 €  
[publication date: November 2020]

This book focuses on the ancient Near East, early imperial China, South-East Asia, and medieval Europe, shedding light on mathematical knowledge and practices documented by sources relating to the administrative and economic activities of officials, merchants and other actors. It compares these to mathematical texts produced in related school contexts or reflecting the pursuit of mathematics for its own sake to reveal the diversity of mathematical practices in each of these geographical areas of the ancient world.

Based on case studies from various periods and political, economic and social contexts, it explores how, in each part of the world discussed, it is possible to identify and describe the different cultures of quantification and computation as well as their points of contact. The thirteen chapters draw on a wide variety of texts from ancient Near East, China, South-East Asia and medieval Europe, which are analyzed by researchers from various fields, including mathematics, history, philology, archaeology and economics.

The book will appeal to historians of science, economists and institutional historians of the ancient and medieval world, and also to Assyriologists, Indologists, Sinologists and experts on medieval Europe.

Please visit the site: <https://www.springer.com/gp/book/9783030483883>

---

## **THE MEANING OF COLOR IN ANCIENT MESOPOTAMIA**

BMCR 2020.09.29

Shiyanthi Thavapalan,

Culture and history of the ancient Near East, 104. Leiden: Brill, 2019. 524 p.  
ISBN9789004415379 €163,00.

Review byUlrike Steinert, Johannes Gutenberg-Universität, Mainz.

[usteiner@uni-mainz.de](mailto:usteiner@uni-mainz.de)

The present monograph is based on a doctoral thesis submitted to the Department of Near Eastern Languages and Civilizations at Yale University in 2017. It presents the first comprehensive study on color in ancient Mesopotamia to date.[1] The book consists of four chapters and an epilogue, supplemented by two Appendices (with tables of mineral pigments attested from Egypt and the ancient Near East), and thirty plates with color and black-and-white photographs of mineral specimens and ancient artefacts discussed in the study.

In the first chapter (“Color Semantics,” pp. 1–19), Shiyanthi Thavapalan introduces a brief history of color theories in different world cultures, and sketches modern research on color perception and color terms. This forms the theoretical background for her study. Chapter 2 (pp. 20–166) comprises a systematic investigation of words and expressions for colors in the Akkadian (i.e., Babylonian and Assyrian) language, focusing on “abstract color terms” and on words for the process of coloring or the state of being colored. Chapter 3 (pp. 167–373) studies “material colors,” i.e., Akkadian terms for colored substances (dyes and pigments, terms for precious stones and metals) and materials (such as glass, leather, wool). Chapter 4 (pp. 374–414) presents a case study on the polychromy of Neo-Assyrian palace reliefs, through an analysis of pigment traces on a group of reliefs from the North-West Palace at Nimrud in the possession of Yale University. The “Epilogue” (pp. 415–417) summarizes the findings of the book.

Chapter 2 sets out to delineate salient aspects of the conceptualization and categorization of colors in Akkadian cuneiform texts, by delineating and analyzing a core of abstract color terms, which Thavapalan distinguishes from concrete, material-based color terms discussed in Chapter 3. The approach chosen by Thavapalan draws on Brent Berlin and Paul Kay’s research on the so-called “Basic Color Terms,” which according to Berlin and Kay are not restricted in application, are frequently used, are abstract, and form a set of “psychologically salient” color terms in any given language.[2] All of the fourteen abstract terms elucidated by Thavapalan as most the salient Akkadian color terms are verbal (mostly verb-derived adjectives), while the concrete color terms are typically non-verbal.

Further criteria used by Thavapalan for establishing the centrality of the Akkadian abstract color terms are: 1) the existence of derivatives and nominal forms, 2) a high frequency of attestations in textual sources, 3) their occurrence in literary texts, and 4) their use in figurative expressions.



This approach diverges from previous Assyriological attempts on Mesopotamian color terms, such as Landsberger's study (1967), which argued that the Akkadian and Sumerian languages had a poor color vocabulary of only five primary color words (black, white, red, yellow/green, and multicolored). In contrast, one of the crucial conclusions of Thavapalan's analysis is that Akkadian in fact had "a sophisticated color lexicon" (p. 415).

Another major insight presented in Chapter 2 is that in contrast to the hue-based English color vocabulary with which we are familiar, brightness and saturation (often in combination with hue) play a more important role for the meaning of Akkadian color words. Adapting a typology developed in linguistic studies of color term semantics, Thavapalan divides Akkadian color words into four categories (pp. 39–42): 1) PURE BRIGHTNESS terms (e.g., *namru* "dazzling," *eklu* "dark," *eṭū* "dim"); 2) BRIGHTNESS-DOMINATED terms indicating a level of brightness together with a focus on specific hues (e.g., *peṣū* "light+white," *ṣalmu* "dark+black," *ḥ/ruššū* "glowing+orange"); 3) HUE-DOMINATED terms only secondarily indicating a level of brightness (e.g., *pelū* "light orange/red"); 4) SATURATION-DOMINATED terms only secondarily indicating hue or brightness (e.g., *sāmu* "vivid+red," (w)arqu "pale+yellow/green").[3] As Thavapalan concludes, the stronger focus on brightness and saturation in Akkadian color terms may explain the fuzziness of several words with regard to hue: for example, (w)arqu can refer to both yellow and green, *sāmu* to shades of both red and orange.

The systematic investigation of color terms in Chapters 2 and 3 begins for each term with a discussion of etymology/history of textual attestations and orthography/by-forms. In the presentation of textual attestations for the color terms, Thavapalan differentiates between "characterizations" (i.e., statements about the visual properties of objects found in texts, reflecting perceptual reality), and "designations" (i.e., uses of specific color terms to classify an object "in terms of a particular visual category" (p. 32), reflecting a referent-specific color system that does not necessarily yield information about empirical reality (e.g., designations such as egg white or white wine). Examples of such color designations can be found in the five-color system used to classify objects in Mesopotamian lexical lists (such as *urs-ra: ḥubullu*), but also in the extended meanings some color terms can take on in technical text corpora (e.g., in medical texts, where *peṣū* "white" can refer to the "unnaturally blanched" appearance of body parts).

Statements that include comparisons to daily life objects can be helpful to elucidate a color term's semantic focus (e.g., when the skin is described as being as black (*ṣalmu*) as pitch); but technical texts referring to identifiable phenomena and processes may also offer valuable clues (see, for example, p. 151 on the identification of the hue of *ḥ/ruššū* "orange"). Furthermore, the use of color terms in figurative language and idioms often underlines the symbolic or psychological meanings of colors (see, e.g., the overview presented in Table 2.4 on p. 37 and further in Chapter 2). The application of Thavapalan's methodology in Chapter 2 results in a highly informative, detailed and well-presented survey that covers a broad range of textual sources and advances a much more nuanced and precise characterization of central Akkadian color words, both in terms of their spectrum and their semantic boundaries.

Chapter 3 highlights the importance of concrete materials such as mineral pigments, metals, and organic dyes for our understanding of the Akkadian color lexicon. Thavapalan analyzes the words for “material colors,” drawing attention to their embeddedness in economic and social practices, to their uses in industries, crafts, technologies (e.g., textile industries, glass making, metallurgy), to the complex processes of procurement, production, and circulation (e.g., import, trading) of such materials, and their role in technological innovations. The high economic and cultural values of some of these materials are likewise highlighted. As one central insight of this dense chapter, Thavapalan demonstrates that although names for materials usually cannot be regarded as color words strictly speaking, occasionally, substances such as lapis lazuli (uqnû), or gold (ḥurāšu) can become color terms, through processes of semantic extension and adaptation to new contexts, techniques, and materials (e.g., in references to dyed fabrics, or glass/glazes imitating the color of specific precious stones).

Specialists and readers interested in the history of Mesopotamian crafts, science and medicine will appreciate Chapters 2 and 3 as a rich resource. For example, a number of the substances (minerals, pigments, plant dyes) discussed by Thavapalan also had medicinal uses.

Although the exact identification of several of these substances (in terms of chemical compound or plant species) still remains uncertain or conjectural, Thavapalan offers very useful collections of textual evidence, critical discussions of secondary literature, and suggestions for identifications. In several places, Thavapalan proposes compelling revisions of the meaning of specific color terms proposed in earlier scholarship, or a new identification of specific substances. Notable examples that result from a combination of textual sources and material evidence from the archaeological record are the identification of duḥšu/dušû with calcite, and of zagindurû with Egyptian blue, a vitreous material of a light blue or turquoise color (pp. 244–264; 355–366).[4]

Chapter 4 presents a study of original color traces on Neo-Assyrian palace reliefs from Nimrud housed at the Yale University Art Gallery.

Thavapalan situates these objects within the history of acquisition and display of ancient reliefs and statues in European and North American museum collections, pointing out that conservation practices in the late 19th and 20th centuries contributed to a loss of color traces, and to distorted perceptions of Ancient Near Eastern art as colorless – a false impression given the almost ubiquitous use of color in Assyrian palatial architecture (e.g., painted plaster, sculpture, and glazed bricks).[5]

As the study of the Yale reliefs from Nimrud (pp. 403–414) demonstrates, the non-invasive technology of visible-induced luminescence imaging can reveal even minimal ancient color traces not visible to the naked eye.[6] The experiments carried out by Thavapalan with Jens Stenger and Carol Snow from the Yale University Art Gallery detected quantities of Egyptian blue,[7] thus extending a previous chemical analysis of pigment traces that identified white pigment (calcium carbonate/sulfate), black (charcoal/bone), and red (hematite and cinnabar).[8] Notably, some areas on the Yale reliefs yielded simultaneous traces of two different pigments, suggesting that mixtures or layering of different colors were used to create specific shades or hues (e.g., purple, dark blue). This evidence leads Thavapalan to conclude that the color palette of artists in first-millennium-BCE Assyria was more sophisticated than has previously been recognized.

The analysis also highlights that the stone reliefs were very likely completely colored, and that sculpture and the painting of that sculpture were of equal importance in the decorative programs of Neo-Assyrian palaces. In light of the historical inscriptions from the same period evoking the splendor of palace decorations (from metal plating to glazes) through metaphors referring especially to brightness, Thavapalan emphasizes that colors served to brighten up interiors and to enliven sculpted decorations.

In conclusion, *The Meaning of Color in Ancient Mesopotamia* is a ground-breaking, methodologically innovative, and insightful work. It makes an important contribution to the fields of color studies, historical semantics, and to the history of technologies, enriching our current understanding of Mesopotamian worldviews, languages and material culture. The book will be a valuable resource not only to Assyriologists, but, due to its comparative perspective, also to historians, linguists, and readers interested in the interrelations between language, thought, and culture.

### Notes

[1] The only lengthy essay discussing Sumerian and Akkadian color terminology was published by Benno Landsberger in 1967 (B. Landsberger, “Über Farben im Sumerisch-Akkadischen,” *Journal of Cuneiform Studies* 31 (1967), 139–173. More recent contributions to the topic of colors and color terminology in Mesopotamia, e.g. by Maria Bulakh and David Warburton, are introduced by Thavapalan on pp. 17–18.

[2] B. Berlin and P. Kay (1969), *Basic Color Terms: Their Universality and Evolution*, Berkeley.

[3] Notably, Thavapalan includes material-based color terms such as *uqnû* “lapis lazuli” or *ḥurāṣu* “gold” among category 2 (BRIGHTNESS-DOMINATED) color terms (p. 40).

[4] The proposed identification of the plant *kasû*, which served as a condiment, basic staple food, red dye and medicinal substance, with safflower (pp. 350–352) should, however, be revised in the light of the recent study by Sona Eypper, convincingly demonstrating that *kasû* has to be tamarind (see S.C. Eypper [2019], “*kasû*(GAZISAR) Revisited,” *Le Journal des Médecines Cunéiformes* 33, 35–49).

[5] A number of other studies, e.g., on ancient Mesopotamian wall painting and painted statues, have likewise contributed to correcting this perception, see, e.g., A. Nunn (1988), *Die Wandmalerei und der glasierte Wandschmuck im Alten Orient*. Leiden; A. Nunn (2010), “Farben und Farbigkeit auf mesopotamischen Statuetten,” in J. Hempelmann and E. Rehm (eds.) *Kulturlandschaft Syrien: Zentrum und Peripherie*. Festschrift für Jan-Waalke Meyer. Münster, 427–448, 657–669. See further the contributions listed by Thavapalan on p. 19 n. 71.

[6] This technique was developed by Giovanni Verri; see G. Verri et al., “Assyrian Colours: Pigments on a Neo-Assyrian Relief of a Parade Horse,” *The British Museum Technical Research Bulletin* 3 (2009), 57–62.

[7] The findings of this survey are also summarized in S. Thavapalan, J. Stenger and C. Snow, “Color and Meaning in Ancient Mesopotamia: The Case of Egyptian Blue,” *Zeitschrift für Assyriologie und Vorderasiatische Archäologie* 106(2) (2016), 198–214,

including a larger number of photographs of relief details revealed by visible light imaging than the selection of b/w photographs presented on Plates 25–30 of Thavapalan’s monograph.

[8] The results of this analysis by Elizabeth Hendrix are discussed by Thavapalan on pp. 392–396.

Please visit the site: <https://bmc.brynmawr.edu/2020/2020.09.29/>

---

---

## **EΙΔΗΣΕΙΣ - NEWS RELEASE**

# **LONG-LOST PHOENICIAN FIGURINES COULD REVEAL SECRETS TO ANCIENT CULT, BY HANNAH BROWN**

“They were wrapped in newspapers from the 70s and covered in these brittle plastic bags that crumbled as soon as you touched them.”

A treasure trove of Phoenician figurines and ceramic vessels – that sat in the storerooms of the National Maritime Museum in Haifa for decades – were rediscovered three years ago, when three archeologists from the University of Haifa examined them and realized they held important clues about the religious and social life of the Phoenicians who sailed the waters of the Mediterranean and beyond.

The three archeologists, Meir Edrey and Assaf Yasur-Landau of the Leon Recanati Institute for Maritime Studies, Haifa Center for Mediterranean History, Department of Maritime Civilizations, and Adi Erlich of the Zinman Institute of Archaeology, Department of Archaeology and Department of Art History, recently published their findings in the International Journal of Nautical Archaeology.

The research shows that while it was long believed that these figurines and vessels had been aboard one or more shipwrecks, they were not from the same era, rather, they were cast into the Mediterranean over several centuries to appease the gods and to ask for divine favors. Another possibility is that these votive offerings were meant as a substitute for the then-common practice of child sacrifice.

THE STORY of how the figurines got into and out of the museum storage room and into the forefront of the new research is a drama in itself.

They were chance finds by Rubi Shusmos about a kilometer off the coast of Shavei Zion, a moshav in northern Israel, in the early 1970s.

Shusmos was not an archeologist but a “fisherman and a diver, who was an antiquities robber,” said Edrey. “He looted and sold a lot of what he found, maybe hundreds of objects. My theory is that he tried to sell the figures to the museum, which is how the site became known.”

Eventually, museum officials persuaded Shusmos to reveal the location of the finds. Underwater surveys and excavation sessions were launched by Elisha Linder of the University of Haifa in cooperation with the Maritime Museum and with the assistance of volunteers from the Underwater Exploration Society of Israel.

“The most beautiful pieces were shipped to museums,” such as the Hecht Museum at Haifa University and the National Maritime Museum.

But about half the finds were stored away and forgotten for about half a century, until the museum was reorganizing and wanted to get rid of them. When it contacted Dr. Ehud

Galili, a retired researcher from the Israel Antiquities Authority and a research fellow at the University of Haifa, he realized one man's trash was another man's treasure. He got in touch with Edrey, Erlich and Yasur-Landau.

“These boxes had not been opened since the 70s,” said Edrey. “They were wrapped in newspapers from the 1970s and covered in brittle plastic bags that crumbled as soon as you touched them.”

Rats roamed freely through the store room. “It was like something from an Indiana Jones movie,” Yasur-Landau added.

The terracotta figures and ceramic vessels had never been registered with the Antiquities Authority or examined in detail. Over 300 figurines and fragments were studied as part of this research – although, Yasur-Landau said, “the site could have contained thousands. There is no way to know how many were taken and sold and what are the perimeters of the site.”

WHEN THEY began their research, the experts noted several facts about the objects that cast doubt that they had been carried aboard ships.

Most were from the Persian period, while others could be dated from the Iron Age and the Hellenistic period.

The researchers concluded that they had been accumulated at the site for more than 400 years, from the 7th to 3rd centuries BCE.

They believe that there were so many objects in this single location because they were offerings of a cult that seems to be related to fertility, rather than the cargo of a shipwreck. Many figurines bear markings and symbols connected to Tanit, a Phoenician goddess.

Some have their hands over their stomachs and others have protruding bellies and carry children in their arms.

The researchers believe that the Phoenicians of this era dedicated pregnant figurines to Tanit, possibly to symbolically substitute the sacrifice of their children if their wishes were granted. Other finds from the site include a clay leg, which is thought to represent an offering by a person who wanted his leg healed, further strengthening their hypothesis of the site being used for cultic activities.

Since the Phoenicians were so dependent on the sea for their livelihood, it makes sense that besides worshiping in land based-temples and sanctuaries, they also practiced rituals at sea, possibly seeking to continue to reap the profits from their seafaring exploits and they may have wished for a longer sailing season and calmer seas.

Such sites exist throughout the Mediterranean and the spot where worshipers cast offerings is not unique to Shavei Zion. Figurines have also been found near other Phoenician sites, mainly in the waters off Tyre in southern Lebanon.

BUT WHAT why was the Shavei Zion site chosen for this kind of worship?

“That’s the big question,” said Erlich. “It could have been to commemorate a certain event that took place there. Somebody could have had a vision there, or been saved from a disaster.”

Yasur-Landau said that “it’s between two large Phoenician sites, Achziv and Acre. But we don’t yet know why [specifically] here.”

In a recent New York Times article on the find, historians and researchers from around the world, including Dr. Helen Dixon of East Carolina University, hailed the new findings as a breakthrough in understanding the meaning of these figurines and vessels.

The University of Haifa researchers are currently at work on another paper that will explore more deeply the terracotta figurines and what they represent.

Erlich said the experts are focusing on answering several questions.

“It’s hard to tell exactly who or what was worshiped, although we know about some Phoenician legends... People were visiting this site for at least 200 years, so it was part of the social and religious memory of the people.”

It is important to note that while there have been other underwater sites found off the coast of Israel, this is something that had not been found here before.

“We know about the other underwater sites: about shipwrecks and harbors that were submerged, and Stone Age settlements that disappeared below the sea. But this is a brand-new type of underwater site for Israel and they will be looking for others,” said Yasur-Landau.

**Please visit the site: <https://www.jpost.com/israel-news/figurines-forgotten-in-haifa-for-decades-tell-tale-of-phoenician-cult-641482> [Go there for pix]**

---



## **FROM THE SEABED, FIGURES OF AN ANCIENT CULT, BY JOSHUA RAPP**

A trove of Phoenician artifacts was long ascribed to a single shipwreck. More likely they were tossed overboard, and over centuries, a new study suggests.

Three 2,500-year-old Phoenician figurines recovered from the Mediterranean. The leftmost and center figurines carry a symbol associated with Tanit, a mother goddess of the Phoenician pantheon. Credit...Jonathan J. Gottlieb

In 1972, in one of the early finds of marine archaeology, researchers discovered a trove of clay figurines on the seabed off the coast of Israel. The figurines — hundreds of them, accompanied by ceramic jars — were assumed to be the remains of a Phoenician shipwreck that had rested under the Mediterranean for 2,500 years.

The artifacts were never fully analyzed in a scientific study, and were filed away and mostly forgotten for decades. But a new analysis by Meir Edrey, an archaeologist at the Leon Recanati Institute for Maritime Studies at the University of Haifa in Israel, and his colleagues indicates that the items were not deposited all at once in a wreck. Rather, they accumulated over roughly 400 years, between the 7th and 3rd centuries B.C., in a series of votive offerings, as part of a cult devoted to seafaring and fertility.

“These figurines, the majority of them, display attributes related to fertility, to childbearing and to pregnancy,” Dr. Edrey said.

The ancient Phoenicians were a seafaring merchant culture that stretched across the Mediterranean. Their first city states arose nearly 5,000 years ago, and the culture reached its height during the millennium before Carthage was defeated by Rome in 146 B.C.

In the 1970s, a number of the Phoenician figurines began turning up on the illicit antiquities market. Researchers at the time tracked down the vendor and persuaded him to reveal the source; the details led to the discovery of hundreds of figurines and amphorae, or clay jars, at a site called Shavei Zion, off the coast of western Galilee.

The items were ascribed to a shipwreck dating to the 6th century B.C.

But Dr. Edrey’s team examined thousands of pottery shards and found they were quite different in style. Such variation typically indicates that pots come from different time periods, suggesting the site was not the result of a single event.

“I’m completely convinced that their understanding of this site is correct,” said Helen Dixon, a historian at the East Carolina University who was not involved in the recent study but did some work on the early findings at Shavei Zion as part of her doctoral research.

“They’re being cautious and scientific, but I’m sold.”



She noted that the loose jumble of amphorae at Shavei Zion contrasted with that of shipwrecks found off the Maltese coast, which have similar-looking pots laid out in an orderly fashion.

Dr. Edrey and his team also looked at more than 300 figurines, which fit within several themes. Many of the figurines carried symbols associated with Tanit, a goddess of the Phoenician pantheon — and the main goddess of Carthage by the 5th century B.C. Others bore dolphin symbols, also associated with Tanit, while some of the figures showed a pregnant woman carrying a child.

“Tanit was the mother goddess for the pantheon,” said Aaron Brody, director of the Badè Museum at the Pacific School of Religion; he has published work on Phoenician religion but was not involved with the new study. “She quite literally was the mom of the family of deities.”

Dr. Edrey speculated that practitioners of a fertility cult came to this area periodically to cast offerings into the water. The figurines might represent common people, and casting them into the sea could represent a type of sacrifice that substituted for the real thing, he said.

In some figurines the right hand is upright, and the left sits below the mouth. This could indicate some sort of vow in exchange for a divine favor, such as safe passage on a voyage, Dr. Edrey said, which would have been particularly important for the seafaring Phoenicians.

“The figurines are in some ways kind of a bridge between the earthly world and the divine,” Dr. Brody said.

Knowledge of Tanit and of Phoenician religion is limited, as most of the papyrus from that period has not survived. Still, Dr. Dixon said, the Shavei Zion figurines add to what researchers have learned from similar figurines found in tombs.

“In the same way that figurines might be part of ritual going on into a dangerous part of the sea, they might be part of a burial, preparing for a journey to the afterlife,” she said.

“Every day sailors are leaving a record over time, not because they were told to by the king. It’s sort of just romantic and beautiful in that way — a touchstone from everyday people in the past.”

**Please visit the site: <https://www.nytimes.com/2020/09/01/science/archaeology-phoenician-israel-shavei-zion.html> [Go there for pix]**

---

## **THE MUD WHISPERERS - ISRAELI ARCHAEOLOGISTS INVENT DISGUSTING BUT EFFECTIVE NEW WAY TO DATE ANCIENT RUINS**

The method has a substantial ick factor, but human and animal waste incorporated in mud bricks over centuries can reliably indicate the age of structures, archaeologists say Ariel David

Mud bricks are among the least glorified of archaeological discoveries. Less durable and imposing than massive stone walls, not as captivating as a cryptic inscription or a work of art, their friable remains are rarely the star attraction at ancient sites. In antiquity and mainly in the Near East, construction with bricks made of mud and straw was common. The rub is that most of the structures built with them have since crumbled away, leaving only stone foundations for us to ooh and aah at.

Now, however, some Israeli archaeologists suggest a new way to date structures at multi-layered sites, ancient settlements that have been built, destroyed and rebuilt time after time, based on the humble mud brick.

A warning to those of a delicate disposition: the method has a bit of an ick factor. It involves analyzing the chemical composition of the bricks based on the assumption that over the centuries the same raw materials were recycled to make new buildings, and with each generation larger amounts of human waste, as well as garbage and other organic residue, got mixed into the mud bricks.

The idea is the brainchild of a spry, 72-year-old archaeology student, Jacob Schreibman, who tested his method on the ruins of Azekah, a site in southern Israel that has more than 3,500 years of history.

### **Throwing out the past**

Schreibman, an industrial engineer with a career as a hospital administrator, was always interested in the early history of the Levant and decided to study archaeology after retiring seven years ago. The idea to focus his research on this oft-overlooked construction material came to him as he observed a bucket line, which is what archaeologists form to clear buckets filled with sediment from the day's digging and unceremoniously dump it on a pile.

Most of the dust and soil that is thrown out at a site like Azekah consists of the pulverized remains of mud bricks that were once part of the city's architecture, Schreibman says.

“We throw away about 90 percent of what we dig up and focus only on the pottery, stone walls, bones and other finds,” he tells Haaretz.

“It's not possible that 90 percent of what we find has nothing to say to us.”

Azekah is a tell, an artificial mound formed by the accumulated layers of human habitation over centuries or millennia. There are dozens of tells in Israel alone and many more across the world, mainly concentrated in the Near East, the region with the longest record of sedentary occupation.

The city lies atop a ridge overlooking the Elah Valley and the coastal plain, and is perhaps best known as the purported setting for the biblical duel between David and Goliath. But its strategic location means the city's history stretches way back before and beyond the biblical period. In fact, it reached its greatest extension in the Middle Bronze Age, centuries before David supposedly lived, when the Canaanites built the first city on the site around 1,700 B.C.E.

Their large settlement was built mostly on bedrock, meaning there was no natural accumulation of soil atop the ridge that could be mixed with water to make mud bricks, says Oded Lipschits, a professor of archaeology from Tel Aviv University who directs the expedition at Azekah.

Yet archaeologists found remains of massive mud brick walls from that time, the Middle Bronze Age, particularly on the town's fortifications. So where did the Canaanites get the raw material to build their bricks?

### **Crappy walls**

Lipschits' theory is that those first builders of Azekah hauled approximately 30,000 metric tons of mud (the equivalent of about 160 Boeing 747s) from a stream in the valley below and up the hill in order to build a city that large.

This feat inadvertently benefited the later inhabitants. The multiple settlements that were subsequently built on each other in the Israelite, Persian, Hellenistic, Roman and Byzantine periods simply recycled the eroding remains of the preceding city to mold new bricks, the archaeologist postulates.

Under Lipschits' guidance, Schreibman set out to test this theory by comparing the physical and chemical composition of mud brick walls already securely dated, by other methods, to different eras.

The mud in mud bricks is generally composed of sand, silt and clay in varying proportions. And surely enough, walls from the Middle Bronze Age contained those materials in amounts that were similar to samples taken from the surrounding valley, Schreibman told Haaretz during a recent interview.

“A city is built and people live in it for quite some time. Then something happens: war, an earthquake, climate change, and the place is abandoned and the bricks crumble due to erosion by water and wind,” he says. “Then new people come, maybe centuries later, and build a new settlement, creating new bricks from the same material – but meanwhile something has happened to this material.”

During the intervening years, the rain has washed away part of the clay in the sediment, meaning that the “recycled” mud bricks have a higher content of sand as time goes on, Schreibman explains. As expected, lab tests have shown that in more recent ruins from

the Late Bronze and the Iron Age the clay content is progressively reduced, which also makes the bricks more fragile and less durable, he says.

Conversely, the analysis shows an increase over time of chemicals such as phosphorus that are associated with the decay of human waste, animal bones and other organic materials that would have accumulated in the settlement over time. For example, in later periods, the amount of phosphorus in the bricks made of the local mud is almost double that found in normal farmland, Schreibman says.

To put it bluntly, it seems that in each new generation the Azekahites were building their homes by recycling their ancestors', ehm, leavings.

This slightly revolting factoid is not only a confirmation of the theory about the origin and reuse of the sediments on Azekah: it could potentially turn into a tool to help date newly discovered structures at this site and at other multi-layered tells just like it, Lipschits told Haaretz during a recent tour of the site.

### **A tricorder for archaeologists**

Schreibman based his MA thesis at Tel Aviv University on the analysis of the mud bricks from Azekah, under the supervision of Lipschits and fellow archaeology professor Yuval Gadot. Now he's working on a PhD that tries to prove this dating method can be successfully applied to other sites as well.

Of course, archaeologists have long been able to date ancient ruins by sampling organic materials and then radiocarbon dating them. The advantage of the new method is that it is cheaper and quicker than carbon 14 testing, Schreibman says.

The archaeologist is also working on a way to use X-RF (X-ray fluorescence) analyzers for this purpose. This technology uses X-rays shot from a handheld device to determine the chemical composition of a material, sort of like a tricorder in Star Trek. This would mean that the dating of ancient mud brick structures could be conducted on the spot in the field and less destructively than by sending samples to a lab.

On the downside, Schreibman acknowledges, his method is less precise than radiocarbon dating, and requires building a different calibration scale for each tell. In other words, archaeologists first need to build a baseline of each specific site using remains of brick walls that have been dated through other methods, and only then can then compare those results to newly discovered structures to quickly figure out their age.

Still, Lipschits maintains, mud bricks are the most common material found in digs, rivaled perhaps only by pottery, so the new method shows huge potential to help archaeologists investigate the mysteries of ancient cities.

**Please visit the site: <https://www.haaretz.com/archaeology/premium-israelis-invent-disgusting-but-effective-new-way-to-date-ancient-ruins-1.9157297>**

---

## **2,600-YEAR-OLD WINE 'FACTORY'** **UNEARTHED IN LEBANON,** **BY TOM METCALFE**

The oldest press found in the country was used by ancient Phoenicians to manufacture vintages once adored around the Mediterranean.

Archaeologists have unearthed new evidence of the extensive overseas trade in wine by the ancient Phoenicians, with the discovery of the oldest wine press in Lebanon.

The find sheds new light on winemaking by the Phoenicians, the seafaring merchants who introduced a culture of drinking wine throughout the ancient Mediterranean, and whose influence lives on in the beverage's worldwide popularity.

Excavations at Tell el-Burak, about five miles south of the Lebanese coastal city of Sidon, have revealed the well-preserved remains of a wine press used from at least the seventh century B.C. It is the earliest wine press ever found in the Phoenician homelands, which roughly corresponded to modern Lebanon. The discovery is featured in a study published Monday in the journal *Antiquity*.

Large numbers of seeds show grapes were brought there from nearby vineyards and crushed by treading feet in a large basin of durable plaster that could hold about 1,200 gallons of raw juice.

The resulting “must” was collected in a large vat and stored in distinctive pottery jars known as amphorae for fermenting, aging, and transport. (Here's how climate change is changing the flavor of French wine.)

The wine press was excavated along with four mudbrick houses at Tell el-Burak, part of a Phoenician settlement inhabited between the eighth and sixth centuries B.C. that was probably devoted to making wine for trading overseas, the researchers write.

“Wine was an important Phoenician trading item,” says H el ene Sader, an archaeologist at the American University of Beirut (AUB) and co-director of the Tell el-Burak Archaeological Project. Phoenician wine from the Sidon region was particularly famous and mentioned in texts from ancient Egypt, she adds.

But little evidence of Phoenician winemaking had been found in Lebanon itself, possibly due to the haphazard nature of archaeological excavations.

“The coast of Lebanon was never thoroughly surveyed, and very few sites with Iron Age [Phoenician] remains have been properly excavated,” Sader says.

Some similar winemaking sites, however, have been found on the northern coast of what is now Israel, which belonged at that time to the Phoenician kingdoms of Tyre and Sidon.

The Phoenicians didn't invent wine—evidence of it from about 8,000 years ago has been found in the country of Georgia—but they spread winemaking throughout the ancient Mediterranean, along with olive oil and innovations such as the alphabet and glass.

**ALCOHOL 101** The earliest known alcoholic beverage dates back to about 9,000 years ago. Find out which civilizations produced the first beers, wines, and spirits; the chemistry behind alcohol's mind-altering effects; and the surprising ways alcohol has influenced culture.

The ancient seafarers introduced vineyards and wineries to their colony cities in North Africa, Sicily, France, and Spain. And they made it popular through trade with ancient Greece and Italy, where wine from wild grapes was known at the time but not so highly developed, says University of Toronto archaeologist Stephen Batiuk, who was not involved in the research. (Discover how alcohol has fueled the development of arts, language, and religion.)

“The Phoenicians perhaps introduced a drinking culture, [new styles of] drinking vessels, and a different way of relating to wine,” he says.

The Phoenicians' love of wine extended to their religion, and its ceremonial use was reflected in other Near East religions as well.

University of Pennsylvania archaeologist Patrick McGovern, an expert in ancient winemaking who was not involved in the latest study, explained that the Phoenicians were descended from the Canaanites, a Bronze Age people who were also predecessors of the Israelites.

“Wine was the Phoenicians' principal beverage for sacrifice,” he says.

“But that was occurring already with the Canaanites, and it was passed along into Judaism and Christianity.”

McGovern speculates that Tell el-Burak may even have supplied some of the hundreds of amphorae on two Phoenician shipwrecks off Ashkelon in Israel, which date from around the same time.

“We did an analysis on several of the amphorae, and it was wine,” he said. “Maybe these vessels were coming from there.”

The Tell el-Burak project is a joint effort by an AUB team and archaeologists in Germany who have studied the site since 2001, although there's been no work at Tell el-Burak for the past two years due to Lebanon's economic difficulties, says Sader.

**Please visit the site:** <https://www.nationalgeographic.com/history/2020/09/2600-year-old-wine-factory-unearthed-lebanon/> [French version at <https://www.nationalgeographic.fr/histoire/2020/09/decouverte-dun-site-vinicole-vieux-de-2-600-ans-au-liban>

---

## **PHOTOREAL ROMAN EMPEROR PROJECT -** **54 MACHINE-LEARNING ASSISTED** **PORTRAITS, BY DANIEL VOSHART**

Using the neural-net tool Artbreeder, Photoshop and historical references, I have created photoreal portraits of Roman Emperors. For this project, I have transformed, or restored (cracks, noses, ears etc.) 800 images of busts to make the 54 emperors of The Principate (27 BC to 285 AD).

Update Sept 10th: New print available here in a choice of languages.  
(Gold / red marble, limited edition print sold out)

Roman emperors: Augustus and Maximinus Thrax Sold Out: First Edition print of Roman Emperors of The Principate. The red marble frame was an homage to feigned marble ovals in Peter Raul Reuben's Roman portrait series.

The Principate — Notes and References

[Pt I] 27 BC–68 AD: Julio-Claudian dynasty (Augustus; Tiberius; Caligula; Claudius; Nero) [Pt II] 68–96: Year of the Four Emperors and Flavian dynasty (Galba; Otho; Vitellius; Vespasian; Titus; Domitian) [Pt III] 96–192: Nerva–Antonine dynasty (Nerva; Trajan; Hadrian; Antoninus Pius; Lucius Verus; Marcus Aurelius; Commodus; Pertinax; Didius Julianus; Septimius Severus; Caracalla; Geta; Macrinus; Diadumenian; Elagabalus; Severus Alexander) [Pt IV] 235–285: Gordian dynasty and Crisis of the Third Century (Maximinus Thrax; Gordian I; Gordian II; Pupienus; Balbinus; Gordian III; Philip the Arab; Philip II; Decius; Herennius Etruscus; Hostilian; Trebonianus Gallus; Volusianus; Aemilian; Valerian; Gallienus; Saloninus; Claudius Gothicus; Quintillus; Aurelian; Ulpia Severina; Tacitus; Florianus; Probus; Carus; Carinus; Numerian)

The main technology behind Artbreeder is its generative adversarial network (GAN). Some call it Artificial Intelligence but it is more accurately described as Machine Learning.

Artistic interpretations are, by their nature, more art than science but I've made an effort to cross-reference their appearance (hair, eyes, ethnicity etc.) to historical texts and coinage. I've striven to age them according to the year of death — their appearance prior to any major illness.

My goal was not to romanticize emperors or make them seem heroic. In choosing bust / sculptures, my approach was to favor the bust that was made when the emperor was alive. Otherwise, I favored the bust made with the greatest craftsmanship and where the emperor was stereotypically uglier — my pet theory being that artists were likely trying to flatter their subjects.



Some emperors (latter dynasties, short reigns) did not have surviving busts. For this, I researched multiple coin depictions, family tree and birthplaces. Sometimes I created my own composites.

\*\*\*\*\*

Daniel Voshart is a designer from Canada. First edition print was a quarantine project. Second edition print made possible by the overwhelming support and important critical feedback to the first print.

\*\*\*\*\*

Please visit the site: <https://medium.com/@voshart/photoreal-roman-emperor-project-236be7f06c8f> [Go there for pix] [Story at <https://www.livescience.com/ai-roman-emperor-portraits.html>]





## **FACIAL RECONSTRUCTION REVEALS EGYPTIAN 'MUMMY PORTRAIT' WAS ACCURATE EXCEPT FOR ONE DETAIL, BY LAURA GEGGEL**

Just after the turn of the first millennium A.D., a young child living in Egypt contracted a deadly illness — most likely pneumonia — and died. His tiny body was prepared for mummification and burial; some of his organs were removed, his remains were wrapped in criss-crossed linen bindings and a portrait of his face was affixed to the front of his mummy.

This so-called "mummy portrait" was part of a popular tradition among some Egyptians in Greco-Roman times, from about the first through the third centuries A.D. But how accurate were these portraits? To find out, a team of scientists in Austria and Germany CT scanned this little boy's body and created a 3D digital reconstruction of his face.

The results show that the portrait was fairly accurate, except for one aspect — the artist made the youngster look older than his 3 or 4 years.

"The portrait shows slightly 'older' traits, which may have been the results of an artistic convention of that time," study lead researcher Andreas Nerlich, the director of the Institute of Pathology at the Academic Clinic Munich-Bogenhausen in Germany, told Live Science in an email.

This single portrait, however, doesn't reveal whether it was a common practice for ancient Egyptian artists to make younger people look older in their mummy portraits.

### **Child-size mummy**

Of the roughly 1,000 recovered mummy portraits from Greco-Roman Egypt, only about 100 are still attached to the mummy. For the project — the first of its kind to compare the mummy portrait of a young child from ancient Egypt with its facial reconstruction — the researchers chose this boy's mummy, found in the 1880s in a cemetery close to the pyramid of Hawara, southwest of Cairo. The 30-inch-long (78 centimeters) mummy, which dates to sometime between 50 B.C. to A.D. 100, is now housed at Egyptian Museum Munich.

The team CT scanned the mummy — and examined X-rays taken of the mummy in 1984 — so they could create a 3D digital image of the boy's body. The CT scan revealed that the boy's brain and some of his abdominal organs had been removed, a common practice during mummification in ancient Egypt. Bone and tooth development revealed the boy's age at his death, probably from pneumonia, according to the researchers, who noticed "residues of condensed lung tissue" on the CT scan, Nerlich said.

Next, the researchers focused on the boy's face. The boy's portrait shows "curled hair woven into two hair strands running from the crest to the ears," the researchers wrote in

the study. "The individual has large eyes of brown color, a long, thin nose and a small mouth with full lips. A necklace with a small medallion hangs around its neck."

To reconstruct the appropriate thickness of the skin, the researchers relied on standards taken from modern children between 3 and 8 years of age. Much of the recreated face was based on the shape of his skull and teeth, while the boy's skin and hair color and hair style were based on the painting, the researchers said.

The facial reconstruction was "very similar" to the portrait, as the dimensions of the forehead to the eye line, and the distance from the nose to the mouth "were exactly the same between portrait and reconstruction," the researchers wrote in the study. "However, differences existed between the width of the nasal bridge and the size of the mouth opening, with both being more slender and 'narrow' in the portrait than the virtual reconstruction."

The two are so similar, the portrait "must have been prepared briefly before or after his death," Nerlich said.

This wasn't always the case for mummy portraits. Previous studies of adult individuals whose mummies were affixed with portraits shows that while some are very similar to reality, others are not; one mummy, this one of an older man with a white beard, showed a portrait of the man when he was young, while another known as "The Glyptothek Mummy" had a portrait of a different person, based on the proportions of the skull, previous research revealed.

Please visit the site: <https://www.livescience.com/mummy-portraits-egypt-accuracy.html> [Go there for pix] [PLOS ONE article at <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0238427>]

---

---

## **FOUR-THOUSAND-YEAR-OLD TEXTILE MILL UNEARTHED IN WESTERN TURKEY**

Excavation has been underway at the Beycesultan settlement, thought to have been built in 5000 BC, where archaeologists have found 40 consecutive cultural layers dating from the late Chalcolithic Period to late Bronze Age.

Over the past several years, excavation in one of the largest settlements in western Anatolia has unearthed enlightening information on the textile history of the region. (Sebahatdin Zeyrek / AA)

Turkish archaeologists have unearthed parts of a loom, textile tools and accessories dating back 4,000 years in the country's west.

Excavation and restoration teams have been working at the Beycesultan settlement in Denizli province for over a decade. Excavation in what is one of the largest settlements in western Anatolia has unearthed enlightening information on the textile history of the region.

"Last year's findings related to textile production had excited us. During this year's excavation works, the remaining parts of the house were unearthed," Esref Abay, head of the excavation team, said on Wednesday.

"As a result of this work, we have discovered that there is a textile mill dating back 4,000 years. There are also parts of a handloom," Abay said.

He said that Beycesultan is thought to have been built in 5000 BC and they have found 40 consecutive cultural layers from the Late Chalcolithic Period to Late Bronze Age.

The team had previously found loom parts and textile materials estimated to be 3,600 years old, in the region.

**READ MORE:** Turkey discovers almost three-millennia-old Urartian burial ground

### **Rooting textile production to Denizli**

"We found the structure here dating back to 1700 BC. We think that it belonged to a wealthy family due to its size and rich equipment," Abay said.

"Artefacts that are thought to have been imported from the surrounding regions were found inside this house, which has very large storage rooms," he said, adding that there is a 45-square-metre central room used as a workshop, as well as five other rooms used for different purposes.

Abay pointed out that thousands of loom weights used in textile production, seashells used in decoration, and burnt textile pieces have been discovered to date.

He said that the building was engulfed in a giant blaze but some parts survived it.

Abay added that excavations would continue with the other houses they identified in the layer.

He said these discoveries prove that Beycesultan was a major textile producer and this extended the history of textile in Denizli to a wider period of time.

**Please visit the site: <https://www.trtworld.com/turkey/four-thousand-year-old-textile-mill-unearthed-in-western-turkey-39983>**

---