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Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

- Δεκέμβριος 2021 -

**No man ever wetted clay and then left it, as if
there would be bricks by chance and fortune.
(Plutarch, 'Plutarch's Morals', 1497)**

Newsletter of the Hellenic Society of Archaeometry

- December 2021 -

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ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS

CALL FOR PAPERS, MAARC ANNUAL MEETING (31 JAN–2 FEB 2022), MELBOURNE: THE ARCHAEOLOGY OF CYPRUS

MAARC ANNUAL MEETING 31 JANUARY–2 FEBRUARY 2022 HOSTED BY THE UNIVERSITIES OF MELBOURNE AND AUCKLAND (ONLINE) CALL FOR PAPERS

We are inviting proposals for papers for the following session:

The Archaeology of Cyprus (Session organizers: Craig Barker, The University of Sydney, Jenny Webb, La Trobe University)

Theme:

Australian interest and involvement in the archaeological investigations of Cyprus have a long and distinguished history dating from the work of James R.B. Stewart beginning in the 1930s and 1950s, through to more recent decades including La Trobe University's excavations at Marki Alonia and the University of Sydney's work at the Hellenistic-Roman theatre of Nea Paphos.

Australian and Australian-born researchers are today engaged in a variety of archaeological investigations of the island from the Early Bronze Age to the Medieval era.

This panel will present on a range of topics that are diverse spatially and temporally. Uniting them are a number of key themes that will be explored by presenters: the unique material cultural developments of Cyprus throughout antiquity; the theoretical framework for understanding insularity and internationalism within a dynamic island environment; the growth and development of urban and funeral patterns of behaviour on the island; domestic and international influences throughout time; and the significant role played by Australian researchers for more than nine decades.

Proposals for papers should be sent to mediterraneanarchaeology@gmail.com and must include the following information:

- Title of the paper
- Name, affiliation and email of the proposer(s)
- A short abstract of your proposed paper (of not more than 200 words)

Papers will be 20 minutes with 10 minutes question time.

The final list of speakers for each session will be decided by the session organisers in consultation with the MAARC 2022 local organizing committee.

The deadline for the submission of all paper and poster proposals is the 19th of December 2021.

EUROPEAN GEOSCIENCES UNION (EGU)
GENERAL ASSEMBLY 2022
GEOCHRONOLOGY SESSION
"GEOCHRONOLOGICAL TOOLS FOR
ENVIRONMENTAL RECONSTRUCTIONS", 3–
8 APRIL 2022, VIENNA, AUSTRIA

Dear all,

Calling all geochronologists and geochronology users: the 2022 EGU session CL5.1.4 "Geochronological Tools for Environmental Reconstructions" is now open for submissions! Check out the session summary below and submit your abstracts [here](#) before 20 January 2022

[Session CL5.1.4](#): The Quaternary Period (last 2.6 million years) is characterized by frequent and abrupt climate swings that were accompanied by rapid environmental change. Studying these changes requires accurate and precise dating methods that can be effectively applied to environmental archives. A range of different methods or a combination of various dating techniques can be used, depending on the archive, time range, and research question. Varve counting and dendrochronology allow for the construction of high-resolution chronologies, whereas radiometric methods (radiocarbon, cosmogenic in-situ, U-Th) and luminescence dating provide independent anchors for chronologies that span over longer timescales. We particularly welcome contributions that aim to (1) reduce, quantify and express dating uncertainties in any dating method, including high-resolution radiocarbon approaches; (2) use established geochronological methods to answer new questions; (3) use new methods to address longstanding issues, or; (4) combine different chronometric techniques for improved results, including the analysis of chronological datasets with novel methods, e.g. Bayesian age-depth modeling. Applications may aim to understand long-term landscape evolution, quantify rates of geomorphological processes, or provide chronologies for records of climate change.

Best wishes,

Irka

¹⁴C dating review: <https://www.nature.com/articles/s43586-021-00063-w>

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Phone: +41446332042 / Email: hajdas@phys.ethz.ch / Web: www.ams.ethz.ch

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



HERITAGE SCIENCE SWEDEN FORUM 2021, **30TH NOVEMBER–2ND DECEMBER 2021**

The registration is now open for the Heritage Science Sweden Forum 2021. This year's HSS Forum is a collaboration between the Department of Conservation at the University of Gothenburg and the Swedish National Heritage Board.

HSS Forum's aim is to highlight heritage science in Sweden and increase its visibility as a research area, while shedding light on current issues and initiatives within the field. Through this, the HSS Forum intends to promote and increase collaboration between different organisations and research disciplines.

During the conference, it will be possible for you to get an insight in current interdisciplinary cultural heritage projects and meet a broad representation of professionals in the cultural heritage field. The conference will be conducted digitally in English, and will be organised through half-day sessions focusing on short presentations, talks, discussions and digital poster sessions. The meeting is free of charge. The registration will be open throughout the conference.

Date: 30th November–2nd December 2021

Time: 13:00–15:45 CET

Location: Digitally in Zoom

For registration and programme please visit this webpage:
raa.se/heritagescienceforum/in-english

Alissa Anderson
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MEETING ON POSTGRADUATE CYPRIOT ARCHAEOLOGY: «20 YEARS OF POCA (2001– 2021), 9TH TO THE 11TH OF DECEMBER 2021, BASEL

The Institute for Classical Archaeology at the Department of Ancient Civilizations of the University of Basel is pleased to announce the 18th meeting of Postgraduate Cypriot Archaeology (PoCA). The meeting will take place from the 9th to the 11th of December 2021 in Basel.

The conference will be live-streamed via Zoom. Please find the Programme in the following link:

<https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fklassarch.philhis.t.unibas.ch%2Fde%2Fforschung%2Fpoca-2021%2F&data=04%7C01%7Caegernet%40lists.ku.edu%7C96e0ba9807f9482658b408d9af63b1d8%7C3c176536afe643f5b96636feabbe3c1a%7C0%7C0%7C637733664995019851%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6IklhaWwiLCJXVCI6Mn0%3D%7C3000&psdata=0fnUaRWNU5cp5t2J7YsSwSt7Npy7WQmIfYItBwXIIbE%3D&reserved=0>

Dr Giorgos Papantoniou (he/his)

Assistant Professor in Ancient Visual and Material Culture/ PoCA Steering Committee
Coordinator Department of Classics, School of Histories and Humanities/ Roinn na
gClasaicí, Scoil na Staire agus na nDaonnachtaí Trinity College Dublin, The University
of Dublin/ Coláiste na Tríonóide, Baile Átha Cliath, Ollscoil Átha Cliath Dublin 2,
Ireland/ Baile Átha Cliath 2, Éire

RILEM LHS WORKSHOP, 3-4 FEBRUARY 2022, THESSALONIKI, GREECE, HYBRID TYPE EVENT: PHYSICAL AND VIRTUAL ATTENDANCE, CALL FOR ABSTRACTS

Deadline for abstracts: 10/12/2021

Dear colleague,

RILEM TC 277-LHS Committee would like to invite you to participate on the workshop on "**Lime based materials for repairing Historic Structures**". The event will take place on **3-4 February 2022** in Thessaloniki, Greece.

Because of the Covid-19 pandemic, all necessary adjustments will be made to meet health guidelines and virtual attendance is also available.

The scope of the workshop is to create an interactive forum with academics, researchers, professionals, other stakeholders for presenting the work done and have feedback from the real needs of practice. Unified and harmonized test procedures specific for lime-based repair materials are promoted for the upgrading of the quality of repair works and facilitating the market of these materials. Distinguished scientists will participate as invited speakers.

Objectives of the workshop:

1. Best practices in field applications
2. Regulative frames for testing quality/performance of lime-based materials (l-b-m)
3. Evolution in science and technology
4. Long term performance of repair with l-b-m
5. Retrofitting historic structures with l-b-m
6. Sustainability aspects. Learning from old technologies

The event is organized to give the attendants the opportunity to meet RILEM senior members in a relaxed and informal environment and to chat about their experiences in RILEM. A short (10-15 min) presentation will also be given to explain the mission of RILEM.

The core members of RILEM TC 277-LHS wish this workshop to be devoted to the memory of the distinguished members of the previous RILEM TCs who passed away: Prof. Luigia Binda, Polytecnico di Milano, Dr Eric F. Hansen, Getty Conservation Institute, Dr Thorborg Von Konow, Conservation Institute, Finland.

Deadline for abstracts: 10/12/2021

More information about the workshop you can find at www.rilemlhsworkshop.com.

More information about your travel to Greece at travel.gov.gr.

On behalf of the Organizers,
RILEM Association
Laboratory of Building Materials AUTH
Politecnico di Milano

4TH CIRCULAR ICAS-EMME 3

Dear colleagues,

We really hope this email finds you well.

We would like to share with you the latest news regarding the organisation of the 3rd International Congress for Archaeological Sciences in the Eastern Mediterranean and the Middle East (ICAS-EMME 3).

- This is a kind reminder regarding the abstract submission deadline which has been extended to the end of month **30th of November 2021**.
- We would like also to announce another session entitled “*Archaeological Science studies in the EMME region*”. In this session all regionally based studies that do not fit in one of the thematic sessions already announced are welcome.
- We have set a number of travel support bursaries and prizes. Please visit <https://icasemme.cyi.ac.cy/registration/bursaries>
- Latest news and updates for the conference can be found at: <https://icasemme.cyi.ac.cy/news>
- Further information regarding the registration, the important dates, travel and accommodation can be found on the congress website <https://icasemme.cyi.ac.cy/>

Do not hesitate contacting us for any clarifications.

On behalf of the Organising Committee
Artemios Oikonomou, Co-chair ICAS-EMME 3

ICAS-EMME 3
International Congress on Archaeological Sciences
in the Eastern Mediterranean and the Middle East

<https://icasemme.cyi.ac.cy/>

ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ –
JOB VACANCIES/FELLOWSHIPS

RESEARCH SPECIALIST - MINI CARBON
DATING SYSTEM (MICADAS), W. M. KECK
CARBON CYCLE ACCELERATOR MASS
SPECTROMETER (KCCAMS) FACILITY,
UNIVERSITY OF CALIFORNIA, IRVINE

POSITION DESCRIPTION

Research specialist position opportunity - Mini Carbon Dating System (MICADAS) for Climate Change and Air Quality Research

The W. M. Keck Carbon Cycle Accelerator Mass Spectrometer (KCCAMS) facility at the University of California, Irvine is expanding its analytical capabilities, including the detection of radiocarbon (^{14}C) in microgram-sized samples, with the addition of a Mini Carbon Dating System (MICADAS) to support climate change and air quality research. The MICADAS will be accompanied by multiple devices that facilitate the direct injection of CO_2 to the spectrometer and the automated production of graphite targets. Funding for instrumentation and a new specialist has been granted by the U.S. National Science Foundation.

The KCCAMS facility conducts research to improve understanding of the Earth's carbon cycle through analyses of ^{14}C and stable isotopes ($^{13}\text{C}/^{12}\text{C}$ and $^{15}\text{N}/^{14}\text{N}$) in organic matter, water, and air samples. It provides services to UC and non-UC researchers and educates its user community by hosting researchers in its laboratories and organizing training courses.

To operate the MICADAS, the KCCAMS facility seeks an individual interested in longer-term employment to support system operations, sample processing, data analysis, communication with facility users, training, and method development. The successful candidate is expected to devote approximately 70% of their time to the operation of the MICADAS and associated laboratory, and the remainder interfacing and collaborating with the project's principal investigators. This includes the co-mentoring of graduate and undergraduate students and postdoctoral researchers, the training of visiting researchers, being responsible for safety procedures, and performing other duties for the MICADAS laboratory as needed.

Candidates are expected to have a background in accelerator mass spectrometry (AMS) physics or chemistry with a proven disposition toward experimental techniques and applications. Preference will be given to candidates with an advanced degree, Ph.D. or Ms. degree in physics, radiochemistry or similar AMS-related field, or expected to obtain it before employment.

Salary will be commensurate with experience and would start at \$54,900 plus benefits. The position will be initially for 1 year, renewable dependent on applicant personal contributions to the project. Review of applicants will begin in December 2021 and remain open until filled.

Please apply online at <https://recruit.ap.uci.edu/apply/JPF07223> with a detailed CV, a statement that outlines research experience, skills, and interests, and mentoring experience, and a list of 3-5 references (please do not solicit letters).

If you have any questions please email Prof. Claudia Czimczik (czimczik@uci.edu) and Dr. Guaciara dos Santos (gdossant@uci.edu).

Please refer to <https://recruit.ap.uci.edu/JPF07223> for full details.

JOB OFFER: POSTDOCTORAL SCHOLARSHIP POSITION AT VIEW: HERITAGE SCIENCE AND DOCUMENTARY HERITAGE

The KU Leuven Core Facility VIEW offers a postdoctoral scholarship position for a researcher in international mobility (early career).

www.kuleuven.be/personeel/jobsite/jobs/... VIEW investigates the characteristics of documentary heritage through an interdisciplinary approach. VIEW facilitates research in the fields of diagnosis, conservation and new technologies for the digitalization of historical artifacts. VIEW's labs provide a stimulating environment for in-depth research on heritage documents in physical and digital form.

<https://view.kuleuven.be/>

Responsibilities

- You write and develop your own Research Project on documentary heritage using the labs of the Core Facility VIEW.
- Your research project is mainly related -- albeit not limited -- to the Heritage Collections of KU Leuven (both the Special Collections KU Leuven Libraries and the Precious Books of Maurits Sabbe Library).
- You will publish scientific articles in collaboration with the research team.
- You will present your research on national and international platforms.

Profile

- You hold a PhD within a discipline in Humanities, with preference in (Art) History, Conservation-Restoration or Heritage Studies, or you will obtain it before you start your contract.
- You have yet expertise in material-technical research and imaging techniques of heritage objects, in particular with documentary and library heritage (books, parchment, paper, papyrus).
- You have a understanding of the degradation of heritage materials. By preference you are yet skilled in conservation-restoration techniques of documentary heritage.
- You have a good knowledge of analytical and imaging methods that are used in the field of heritage science and conservation of library materials.
- You act with attention to quality, integrity, creativity and cooperation.
- You are flexible and able to work independently.
- You have collaborated yet in academic projects.
- You have publications in international journals on topics related to our research.
- You are able to speak and to write fluently in English; knowledge of French and/or Dutch is considered a plus.

Offer

- We offer a postdoc scholarship (full-time). The postdoc scholarship will initially be for 1 year and may be extended for another 2 years subject to a positive performance review. A postdoc scholarship can only be awarded to candidates

who you did not stay in Belgium in the past years or to those who were engaged in a principal activity (work, studies, etc.) in Belgium for a maximum of 24 months during the 36 months (3 years) prior to the starting date of the position.

- The planned starting date is the 1st of March 2022 or as soon as possible afterwards.
- You will be administratively connected to the Core Facility VIEW - KU Leuven
- You will conduct your work at KU Leuven in the laboratories of VIEW under the guidance of Prof. dr. Lieve Watteuw (supervisor) and Bruno Vandermeulen.
- We offer a minimum annual salary for the post-doc in international mobility of 43,000 Euro.

www.kuleuven.be/personeel/jobsite/jobs/...

dr. Lieve Watteuw

VIEW - Core Facility KU Leuven

Book Heritage Lab - KU Leuven / Manuscripts & Cultural Heritage

KU Leuven, Faculty of Arts / Faculty of Theology and Religious Studies



2 SCIENCE POSTDOCTORAL POSITIONS - METROPOLITAN MUSEUM OF ART

Position Title: Post-Doctoral Scientific "Research Associate"

Location: 1000 5th Avenue, New York, NY

Department: Department of Scientific Research

Reports to: Environmental Research Scientist, Eric Breitung

Salary: \$58,500 + benefits **Employee Classification:** Full time, Exempt

Effective Date: ~ April 2022 **End Date:** 1 year from start date

GENERAL STATEMENT OF RESPONSIBILITIES & DUTIES:

Conducts research using advanced analytical scientific instruments, techniques, and literature investigations to identify and quantify reactive volatile components of 40 commercially available materials with the purpose of developing a set of chemical solutions for benchmarking materials test methods. This research is the core of a 3-year Institute of Museum and Library Services National Leadership grant focused on establishing benchmarking tools for the tests used in the cultural heritage field for identifying materials for the display, transport, and storage of collections. This research associate will work in tandem with a second research associate in the Preventive Conservation Science Laboratory (PCSL) under the supervision of the Environmental Research Scientist.

PRIMARY RESPONSIBILITIES & DUTIES:

- Establish methods and protocols for identifying and quantifying the reactive volatile components of commercial products using analytical tools at the Met and, when necessary, local universities.
- Collaborate with Germany's BAM institute to conduct BEMMA testing on each material.
- Determine the concentration of a subset of the reactive chemicals present in each product and subject those chemicals to Oddy and paper-testing.
- Establish the levels of corrosion or tarnish produced by the materials and relate the chemicals and their concentrations to the limits for the three levels of degradation commonly used in the Oddy test (permanent, temporary, or unsuitable).
- Purchase and utilize electrochemical stripping tools and methodologies to quantify the degree of metal corrosion on copper, silver, and lead coupons. Correlate degree of corrosion with chemical concentration.
- Utilize x-ray diffraction tools to identify the phase of corrosion observed on copper, silver, and lead coupons. Correlate phase of corrosion with chemical reactants.
- Establish benchmarking chemical solutions and provide solutions to at least 10 other institutions or individuals that also conduct materials testing using the Oddy test.

- Collaborate with PCSL staff, research assistant, and steering committee throughout project.
- Maintain analytical tools as needed throughout project.
- Document novel methods and operating procedures.
- Prepare manuscripts for publication in peer reviewed scientific journals.
- Prepare and present results at national and/or international conferences.
- Document and share results on the AIC's Materials Testing wiki site, developing a benchmarking page for the site in collaboration with contracted web developer.
- Other duties as assigned

REQUIREMENTS & QUALIFICATIONS:

Experience and Skills:

- Demonstrated expertise in advanced liquid or gas chromatographic analytical techniques such as GC/MS, HPLC, or ion chromatography (required).
- Development and implementation of testing methods and protocols for volatiles analysis, ideally the identification and quantification of unknowns.(required).
- Experience quantifying the concentration of volatiles in complex mixtures.(preferred)

Knowledge & Education:

- Ph.D. in analytical chemistry, materials science, related disciplines, or equivalent experience.
- 1-3 years of experience in quantification of volatile unknowns, air quality testing, or chromatography-based testing and analysis.

Fully vaccinated with an FDA or WHO authorized vaccine (or approved for an exemption as a reasonable accommodation due to a disability, sincerely held religious belief, or pregnancy, or because you are a victim of domestic violence, stalking, or sex offenses).

To Apply, email cover letter and CV to Eric Breitung (breite@metmuseum.org) and HR (careers@metmuseum.org).

Eric Breitung
Senior Research Scientist
Metropolitan Museum of Art, Department of Scientific Research
New York NY
(212) 331-8469

VACANCY: TECHNICIAN, MUSEUMS & GALLERIES EDINBURGH

Technician, City Art Centre

Salary: £22,129 to £26,393

Hours: 36 per week

Deadline for applications: December 8th 2021

Museums & Galleries Edinburgh are looking for an experienced technician who will support the interpretation, care, presentation and development of our wide-ranging collections.

You will be based at the City Art Centre, where you will help with the installation, maintenance and dismantling of an exciting and diverse programme of temporary exhibitions. You will be working with historic and contemporary visual art and craft and alongside curators, artists, collections care, front of house and public programmes colleagues. In addition, you will assist with the care and conservation of the City's art collection, a Recognised Collection of National Significance, and from time to time, assist with displays and collections in our other venues.

This is a full-time post working 36 hours per week.

This is a role for someone who is creative, able to problem solve, resourceful, and has good manual dexterity. We're looking for someone with joinery skills, experience of working with technical equipment and a knowledge of audio-visual equipment. You will be part of a small team, so good communication skills, the ability to work to a deadline and to be flexible are essential.

This post is subject to a Standard Disclosure check.

We're committed to creating a workplace culture where all our people feel valued, included and able to be their best at work, and we recognise the benefits that a diverse workforce with different values, beliefs, experience, and backgrounds brings to us as an organisation.

For more information and to apply, visit www.myjobscotland.gov.uk/councils/city-edinburgh-council/...

Gwen Thomas

Collections Care Officer, Museums & Galleries Edinburgh

gwen.thomas@edinburgh.gov.uk

Chair, Icon Scotland Group

chair@iconscotland.org

JOB POSTING: SCIENTIST - METROPOLITAN MUSEUM OF ART

Position Title: Associate Research Scientist
Location: 1000 Fifth Ave, New York City, NY
Department: Department of Scientific Research
Reports to: Environmental Research Scientist, Eric Breitung
Salary Grade: P3 (salary + full benefits) **Employee Classification:** Exempt, Full time
Effective Date: November 2021 **End Date:** N/A

About the Metropolitan Museum of Art

The Metropolitan Museum of Art collects, studies, conserves, and presents significant works of art across all times and cultures in order to connect people to creativity, knowledge, and ideas.

The Met presents over 5,000 years of art from around the world for everyone to experience and enjoy. The Museum lives in two iconic sites in New York City-The Met Fifth Avenue and The Met Cloisters. Since it was founded in 1870, The Met has always aspired to be more than a treasury of rare and beautiful objects. Every day, art comes alive in the Museum's galleries and through its exhibitions and events, revealing both new ideas and unexpected connections across time and across cultures.

GENERAL STATEMENT OF RESPONSIBILITIES & DUTIES:

Provides advanced analytical support and scientific research and analysis toward the improvement of the Museum's understanding, methods, and strategies to prevent degradation of collections due to environmental factors. This work will be performed in the Preventive Conservation Science Laboratory under the supervision of the Environmental Research Scientist. Environmental factors include but are not limited to the off-gassing of materials used to store, display, or transport collections, pollutants, temperature, humidity, particulates, vibration, and light.

Initial focus will be to improve the field's methods for establishing whether display, storage, and transport materials are acceptable for use near art collections using advanced analytical liquid and gas phase chromatographic techniques such as gas chromatography mass spectrometry and ion chromatography. In addition, x-ray diffraction, x-ray fluorescence, infrared, and UV-visible spectroscopy will be utilized.

PRIMARY RESPONSIBILITIES & DUTIES:

- Evaluates commercially available display, storage, and construction materials for compatibility with artwork using established and novel advanced analytical

techniques and protocols including but not limited to volatile organic chemical analysis and material degradation analysis.

- Plans, conducts, and documents, environmental testing to promote the preservation of the collection. Environmental testing includes the evaluation of temperature, humidity, light, dust, pollution, and vibration levels.
- Establishes and implements sensor calibration protocols for analytical and environmental test equipment.
- Develops, maintains, and utilizes databases and guidance documents to document and disseminate test results, advising the Museum on best preventive conservation science practices.
- Collaborates with Registrar, Design, Construction, Conservation, Exhibitions, and Curatorial departments to develop, research, and advise on improving the Museum's environment.
- Performs literature reviews on related topics using scientific and conservation literature, proposing improvements to existing protocols and procedures.
- Writes progress reports, summary reports, standard operating procedures, annotated bibliographies, and publishable manuscripts on related topics and activities.
- Publishes significant findings in peer reviewed scientific literature.
- Maintain scientific equipment, update equipment standard operating procedures, and train users to operate scientific equipment.
- Supervise and collaborate with interns and fellows.
- Other duties as assigned

REQUIREMENTS & QUALIFICATIONS:

Experience and Skills:

- Demonstrated expertise in advanced liquid or gas chromatographic analytical techniques such as GC/MS, HPLC, GPC, or LCMS (required).
- Development and implementation of testing methods and protocols for volatiles analysis, ideally the identification and quantification of unknowns.(required).
- Development and implementation of testing methods and protocols for the evaluation of degraded materials (preferred).
- Experience in photochemistry, spectroscopy, environmental chemistry, air quality monitoring, corrosion science, or preventive conservation science (required).
- Experience testing and evaluating museum environment factors such as temperature, humidity, light, dust, pollution, or vibration levels (preferred).
- Experience implementing advanced statistical analysis methods on scientific data (preferred).
- Development of process automation using modern database software and web-enabled tools (preferred).

Knowledge and Education:

- Ph.D. in analytical chemistry, materials science, related disciplines, or equivalent experience (required)
- 1-3 years of experience in quantification of volatile unknowns, air quality testing, building environment monitoring, or chromatography-based testing and analysis (required).

- Experience working in museum environments, specifically, either with or in proximity of art objects (preferred).
- Strong command of both written and spoken English (required).

Fully vaccinated with an FDA or WHO authorized vaccine (or approved for an exemption as a reasonable accommodation due to a disability, sincerely held religious belief, or pregnancy, or because you are a victim of domestic violence, stalking, or sex offenses).

To apply, send cover letter and CV to breite@metmuseum.org and careers@metmuseum.org

Eric Breitung
Senior Research Scientist
Metropolitan Museum of Art, Department of Scientific Research
New York NY
(212) 331-8469



**JOB: SENIOR SCIENTIST IN
ARCHAEOLOGICAL SCIENCE AT THE
UNIVERSITY OF VIENNA**

We are hiring a Senior Scientist in Archaeological Science at the University of Vienna, specialising in Radiocarbon Dating (for 6 years initially but likely to be extended by mutual agreement).

Come and work with our team in the brand new University Biology Building in beautiful Vienna, the world's most liveable city!

Salary is between €54.2 and €64.4 ka per annum.

Details of how to apply are here: <https://bit.ly/3noEd6Z>

I welcome any questions anyone may have.

Please pass on this advertisement link to your groups and colleagues.

Tom

Prof. Tom Higham
Dept. of Evolutionary Anthropology
University of Vienna
University Biology Building
Djerassiplatz 1
A-1030 Wien
Austria

Phone: +43 1 4277 54740

The World Before Us: How Science is Revealing a New Story of Our Human Origins
Pre-order the paperback here: <https://www.penguin.co.uk/books/316593/the-world-before-us/9780241989050.html>

JOB OPPORTUNITY (TIME SENSITIVE):
SENIOR LECTURER IN CONSERVATION
SCIENCE/HERITAGE SCIENCE,
UNIVERSITY OF GOTHENBURG,
GOTHENBURG, SWEDEN

Position description

We are searching for a Senior Lecturer in Conservation Science/Heritage Science to join the conservation section and contribute to our expertise in the area of the scientific analysis of heritage materials. Experience in the use of methods such as optical microscopy, Fourier Transform Infrared Spectroscopy (FTIR), Raman, Gas chromatography-mass spectroscopy (GC-MS), X-ray Fluorescence (XRF), Scanning Electron Microscope coupled with x-ray energy dispersive spectroscopy (SEM-EDS), electrochemical methods and others such as multi/hyper-spectral imaging and experience in the analysis of both organic and inorganic materials will be considered an advantage.

The successful candidate is expected to develop and maintain a high-level research program with emphasis on materials science and participate in the undergraduate and graduate level teaching in conservation at our department. We expect the successful candidate to strengthen and complement the research performed at our section. We are particularly interested in enhancing our research areas in materials analysis.

Eligibility

The applicant should have a PhD in Conservation/Heritage Science or equivalent. Applicants should be able to demonstrate experience of analytical work in a range of materials. Experience of working with multiple material classes, both organic and inorganic will be considered an advantage.

Employment

Type of employment: Permanent post

Extent: 100 %

Location: Department of Conservation, Gothenburg, Sweden

First day of employment: 1 January 2022 or as agreed

How to apply

In order to apply for a position at the University of Gothenburg, you have to register an account in our online recruitment system. Together with your application the following should be attached:

- CV, including a complete list of publications, and record of received research grants (with amounts).
- Description of scientific achievements and a motivation for the selection of a maximum of ten scientific publications used in the application. Describe your own role and input on each of the selected publications.
- A research plan with a description of current and planned research as well as other planned activities relevant to this position (maximum three pages).
- Demonstration of pedagogical experience, including information about the extent and level of teaching experience and evaluations of its quality. The description should also include subjects you could lead or contribute to, pedagogical reflection and teaching philosophy. (Maximum three pages)
- Description of experiences of leadership, administration and cooperation with professionals from the conservation community in Sweden and internationally.
- Copies of the most relevant publications in full format (maximum ten publications).
- Certificates and other documents to be considered.

The application is to be written in English.

Salary: Expected monthly salary range between 44000 SEK and 52000 SEK

Closing date: 30 November 2021

For more information:

- Regarding the position please contact Stavroula Golfomitsou stavroula.golfomitsou@gu.se
- Regarding the appointment procedure, please contact Anneli Palmsköld anneli.palmskold@conservation.gu.se
- To apply and read more about the position, visit the [University of Gothenburg vacancies website](#)

Elyse Canosa
Visiting lecturer
Department of Conservation
University of Gothenburg
Gothenburg, Sweden

JOB POSTING: ART MATERIALS SCIENTIST **(CONSERVATION SCIENTIST),** **ARTDISCOVERY, LONDON**

Position:

Art Materials Scientist (Conservation Scientist), London, UK (contract position, minimum 1-year with possibility for permanent employment)

Company:

ArtDiscovery Inc. is a London and New York based company focused on supporting investors, owners, sellers and buyers of fine art by providing due diligence for authentication, attribution, and conservation activities. Using imaging and material analyses coupled with technical art history expertise, ArtDiscovery is a recognized leader in this burgeoning market sector. We are seeking a material analyst to work with us on a wide variety of art materials from ancient to modern.

ArtDiscovery is a growth stage company with headquarters in London. ArtDiscovery works with major auction houses, museums, dealers and private collectors.

Employment Type:

Full-Time, part-time or part-time to full-time applicants will be considered. Work period is for a minimum one-year maternity coverage with possibility of leading to permanent position. Position to start by March 2022 at the latest, ideally by February 2022.

Residency permission for the United Kingdom preferred.

Job Description:

- Scientific analysis of fine art materials, especially pigments and binding media.
- Operation of analytical equipment (SEM-EDX, Raman microscopy and FTIR)
- Documentation, organization and storage of physical sample material from artworks and reference samples
- Laboratory and equipment maintenance
- Discussion and planning of workflow and projects
- Willingness to assist with technical imaging equipment

Qualifications:

- The qualified candidate must have demonstrated expertise in the analysis of materials using a range of the following analytical techniques:
- Scanning Electron Microscopy-Energy Dispersive X-ray Spectrometry (SEM-EDX)
- Raman microscopy
- Fourier Transform Infrared Spectroscopy
- High levels of competence with computers required as role requires use of custom software and hardware. Must have general proficiency in Word and Excel.
- Impeccable professional and personal references are a must.

Desirable but not required skills; experience performing the following analytical techniques:

- Gas Chromatography-Mass Spectrometry and Pyrolysis-Gas Chromatography-Mass Spectrometry
- Hand-held XRF
- Polarized light microscopy (PLM)
- Technical imaging of works of art

Skill/Ability:

The qualified candidate will be able to demonstrate that they are self-motivated, problem solving, detail oriented, organized and able to work and communicate well under pressure. The qualified candidate should be able to work effectively both independently and as part of a team.

Required Education/Experience:

The candidate must have at minimum a Bachelor's degree in materials science, chemistry or other related natural science, with a Master's degree or PhD in a suitable subject area preferred; 1-3 years of experience in the analysis of art materials. Experience with identification of pigments and binding media preferred.

Strong command of both written and spoken English (required).

Compensation:

Salary will start from £35,000 per annum upwards, commensurate with level of education and experience. Please indicate salary requirement in letter of interest.

Application instructions:

Applicants should submit a statement of interest, current CV, and three references by no later than January 1, 2022. We expect to start the interview process in January 2022.

Application instructions:

Applicants should submit a statement of interest, current CV, and three references by no later than January 1, 2022. We expect to start the interview process in January 2022.

Applications may be submitted through LinkedIn Jobs (preferred):

www.linkedin.com/jobs/view/2803872134

- or - directly by email to:

jnadolny@artdiscovery.com

Jilleen Nadolny
Director, UK
ArtDiscovery
London
+44 20 7064 1433

ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS

INVITATION TO COLLABORATE ON THE KASTROULI LATE MYCENAEAN PROJECT, NEAR DELPHI, GREECE

The archaeological site of Kastrouli in the town of Desfina near Delphi, Phokis, has been systematically investigated since 2016 until 2020 through an interdisciplinary and multidisciplinary means following an integrated approach (<https://nam10.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.kastrouli.org%2F&data=04%7C01%7Caegeanet%40lists.ku.edu%7C22d7002bd10845e2ddb08d99ebd8d48%7C3c176536afe643f5b96636feabbe3c1a%7C0%7C0%7C637715359828726031%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6Ikl1haWwiLCJXVCI6Mn0%3D%7C3000&data=3BFd4NdRbMy2e1%2F4Y2yAmfErGnZjJuzXQWE5osjc0eQ%3D&reserved=0>). The archaeological excavation employed amongst others, cyber archaeology tools, archaeometric investigations concerning luminescence dating, spectroscopic and mineralogical analyses for the characterization and provenance of ceramic fabric, geophysical prospection.

Major results include the documentation for the use of local clay sources, the dating by typology, C-14 and OSL to the Late Helladic/ Late Mycenaean III and reuse in the Geometric, and later periods. The successful application of archaeogeophysical prospection and accurate positioning of the unearthed finds via cyber archaeology tools, the anthropological and palaeontological study, all have produced important data which start to complete the puzzle for Kastrouli in the periphery of the Mycenaean World in Phokis. The concept of methodology, implementation and interpretation of the obtained data and work in progress are reviewed.

The purpose of the Kastrouli Mycenaean Project (KMP) is:

1. to preserve the site at risk by applying a range of cyber-archaeology and geophysical tools to address the issue of at-risk cultural heritage in the eastern Mediterranean.
2. using this study to help develop a marine archaeology methodology suitable for studying human coastal adaptation during the late Holocene across time and space.
3. focusing on the end of the Late Bronze Age in the eastern Mediterranean to address the problem of the collapse of Mycenaean, Hittite, and New Kingdom Egypt civilizations ca. 1200-1100 BCE to investigate the role that climate, environmental, and social factors may have played in this process.
4. to shed light on the Iron age-"Dark ages" and later periods.
5. to engage in the more local problem of understanding the nature of Mycenaean coastal worlds, and peripheral centers.

This integrated approach takes a transdisciplinary approach to research opening new understandings of issues concerning climate change. So far students from USA, Australia, Europe have participated in the accredited summer school fieldwork, with major experts contribution by University of California San Diego, Brandeis University and Wesleyan University.

The project aims to fully and systematically excavate the site's surface. Situated at a strategic location overlooking the Corinthian gulf, Kastrouli appears to have been an important city of the Late Bronze Age (ca. 1300-1100 BC), a period also known as "Mycenaean" or Late Helladic III B-C, and famous for such mythical sagas as the Trojan War. Through the systematic and interdisciplinary investigation of Kastrouli, we seek to shed new light on the mechanisms that led to the formation of other Mycenaean states such as Thebes, Orchomenos and smaller citadels in Phokis and Boeotia and its relationship to Mycenae, to generate cross-cultural models that help us to understand the processes of state formation around the ancient world. Recent work has identified the site with the Homeric Anemoreia which together with other Phokian cities contributed to the 40 black warships to the naval campaign under the leadership of Agamemnon against Troy.

The Kastrouli Archaeological Project was conducted under the auspices of the University of the Aegean (2016-2020), with Ioannis Liritzis of the Department of Mediterranean Studies overseeing the Project. Since 2016 an international team and students participate either as experts or in accredited summer fieldwork.

The project has already produced unexpected finds in the form of monumental fortified walls and large buildings that may belong to a little Mycenaean palace; cyclopean walls, clay figurines, stirrup jars, pottery, metal finds. Judging from the surface finds in the environs of Kastrouli an apparent model emerges that of central citadel-to-communal clusters evolution. The evidence of using local clay for pottery production, the marine food present, the engineering hydraulic works and the development of husbandry and livestock makes the Kastrouli a quite independent city in the periphery of major palatial centers. The interaction between Kastrouli and the neighboring Palaces at Boeotia and beyond in the Corinthian gulf is crucial in understanding the role and degree of their relationship.

The further work in this settlement is planned for a new 5-yr permit from the Ministry of Culture.

With the present call I would like to invite international teams to join ongoing research with international experts and express an interest to participate and arrange the follow up involving students and funding.

Ioannis Liritzis
Project director

(For more information contact Prof. Ioannis Liritzis at: liritzis@henu.edu.cn; ioliritzis@gmail.com; ioannis.liritzis@euro-acad.eu).

ASCSA ACADEMIC YEAR PROGRAM

Deadline for Applications: January 15, 2022

Already in its second century, the ASCSA Regular Member program remains the foundation of the School's academic program. It continues to provide unparalleled educational experiences and research opportunities for students.

The program runs the full academic year, from early September to late May. All advanced graduate students interested in an intensive survey of the art, archaeology, history, and topography of Greece, from antiquity to the present, are encouraged to apply. There are no grades and no university credit offered, but participation in the Regular Program is a widely recognized part of graduate training in Classics and related fields.

Regular Members reside in Athens, using Loring Hall as their home base, throughout the nine-month academic year (September through May). Students receive comprehensive training through visits to the principal archaeological sites and museums of Greece as well as in seminars led by resident and visiting scholars. They also have the option to take part in the training program at the Corinth excavations. The Regular Member program is directed by the Mellon Professor, Brendan Burke, who oversees and mentors the student members. For more details about the program, click here: <https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.ascsa.edu.gr%2Fprograms%2Fregular-member-program&data=04%7C01%7CAegeanet%40lists.ku.edu%7C146d78d0879643408d5508d9aab8776c%7C3c176536afe643f5b96636feabbe3c1a%7C0%7C0%7C637728531527610495%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6IklhaWwiLCJXVCI6Mn0%3D%7C3000&data=fWA9BARgPiY4X4lbYAQQ0ogXCMtTNvbKxmAViCX3ztw%3D&reserved=0>.

The School generally accepts 15 to 20 students each year into the program.

Eligibility: Regular Membership is open to citizens of the United States or Canada who are graduate students at a college or university in those countries, or to non-citizens enrolled in a graduate program at a cooperating institution. The US or Canadian citizen must be enrolled at a US or Canadian institution at the time of application. Preferably applicants will have completed one or more years of graduate study before entering the School, but well qualified undergraduate seniors who shall hold a baccalaureate degree at the time of entry shall be considered for admission and for the fellowship competition. Applicants are expected to have a reading knowledge of French and German. Reading ability in Ancient Greek, some familiarity with modern Greek, as well as other relevant foreign languages, will be helpful. For in-depth details on eligibility, please see the School's Regulations (Section VI.1-3).

Fellowships: Fellows receive a cash stipend of \$11,500, plus room and board at Loring Hall, and waiver of School fees. Room, board, and other expenses on field trips outside Athens are paid out of the stipend. Fellowships are awarded on the basis of application material, recommendations, and anonymous examinations.

Application: An online application and three letters of recommendation must be submitted. Applicants are required to submit scans of official academic transcripts as part of the online application. Applicants must also take the qualifying examination. Examinations are held on the first Saturday in February. For more about the application process, [click here:](https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.ascsa.edu.gr%2Fapply%2Fapply-for-regular-membership&data=04%7C01%7Caeganeet%40lists.ku.edu%7C146d78d0879643408d5508d9aab8776c%7C3c176536afe643f5b96636feabbe3c1a%7C0%7C0%7C637728531527610495%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6IklhaWwiLCJXVCI6Mn0%3D%7C3000&data=509%2Bdip6z9CwNbozUDN805%2BpKqJ%2FgkdtWGfzv%2FyQtX0%3D&reserved=0)
<https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.ascsa.edu.gr%2Fapply%2Fapply-for-regular-membership&data=04%7C01%7Caeganeet%40lists.ku.edu%7C146d78d0879643408d5508d9aab8776c%7C3c176536afe643f5b96636feabbe3c1a%7C0%7C0%7C637728531527610495%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6IklhaWwiLCJXVCI6Mn0%3D%7C3000&data=509%2Bdip6z9CwNbozUDN805%2BpKqJ%2FgkdtWGfzv%2FyQtX0%3D&reserved=0>.

Inquiries? Contact the Programs Office at application@ascsa.org
<<mailto:application@ascsa.org>>

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

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Pronouns: she, her, hers



2-YEAR MASTER ARCHAEOLOGY IN GRONINGEN

Dear colleagues,

I would like to draw attention to our *two-year Research Master in Archaeology in Groningen.*

The programme has been elected twice* the best Archaeology graduate programme in the Netherlands*. It is given entirely in English and has a broad geographical and chronological coverage – from the Arctic and North-western Europe to the Mediterranean and the Near East, from the Mesolithic to historical archaeology. And of course students can specialize in Aegean prehistory, the Hellenistic and Roman periods in the central and eastern Mediterranean and the Near/Middle East.

Teaching is done in small groups of 10 - 15 students; there is a strong taught element with courses (on the Anthropocene, archaeological theory, settlement and landscape archaeology, material culture and archaeological science, mortuary archaeology, professional skills) designed especially for the 2-year programme. Students acquire a thorough understanding of key debates in archaeology, develop a critical attitude and obtain essential research, organizational and networking skills.

Most importantly, students can tailor the programme to their needs and special interests – for instance, by using the excellent reference collections (zooarchaeology, archaeobotany, pollen analysis) and research facilities (GIS lab). Students can specialize in landscape archaeology, archaeobotany, zooarchaeology, pollen analysis, mortuary archaeology, osteoarchaeology, material culture studies, digital technologies (i.a. GIS, drone-mapping, 3D modelling, Virtual Reality) and archaeological science (i.a. radiocarbon analysis, Bayesian chronological modelling, isotopic analysis, soil micromorphology).

Employment rates among our recent graduates are very high, with many of them getting competitive PhD positions in the Netherlands and abroad, or getting leading positions in the heritage and public sector.

Groningen is a friendly, lively and very safe city with many international students, and has been voted one of the 20 best small cities in the world. The Groningen Institute of Archaeology is situated at the heart of the city.

The* fees* are € 1084 for EU citizens, and € 13216 for non-EU citizens per year.

For more information on the programme, students can:

· Attend the *Groningen Master Week*

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[MC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6IjEhaWwiLCJXVCI6Mn0%3D%7C3000&data=9qWUL6hatC4QWbvj0THIgW4wM9cVbj40%2FiHVb1ed4uU%3D∓reserved=0](https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.rug.nl%2Fmasters%2Farchaeology-research%2F%3Flang%3Den%23!programme&data=04%7C01%7Caeganeet%40lists.ku.edu%7C8e85e371f4fa4de0300c08d9ad931dec%7C3c176536afe643f5b96636feabbe3c1a%7C0%7C0%7C637731669655727905%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6IjEhaWwiLCJXVCI6Mn0%3D%7C3000&data=V1qzw2BEWomO8OAmkamaKNWniB5jiJjWW8lymwB68kw%3D∓reserved=0)

· The online Presentation of the Research Master Archaeology will take place on *Friday 26 November 12.00-13.00*, *Central European Time** zon**e*. You can join at meet.google.com/ysx-rnpq-ogy (via Googlemeets)

· Look up the webpage of the programme:
<https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.rug.nl%2Fmasters%2Farchaeology-research%2F%3Flang%3Den%23!programme&data=04%7C01%7Caeganeet%40lists.ku.edu%7C8e85e371f4fa4de0300c08d9ad931dec%7C3c176536afe643f5b96636feabbe3c1a%7C0%7C0%7C637731669655727905%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6IjEhaWwiLCJXVCI6Mn0%3D%7C3000&data=V1qzw2BEWomO8OAmkamaKNWniB5jiJjWW8lymwB68kw%3D∓reserved=0>

· Write to the Director of Studies, Prof. S. Voutsaki:
s.voutsaki@rug.nl

· For an insider's view, write to the Student Ambassador, Kleopatra Chatzipetrou: k.chatzipetrou@student.rug.nl

Please circulate this among your students.

Best wishes

Sofia Voutsaki

Prof. Sofia Voutsaki
Professor of Greek Archaeology
Director of Studies, Research Master Archaeology Groningen Institute of Archaeology
Poststraat 6, 9712 ER Groningen, The Netherlands
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*Follow Groningen Greek Archaeology

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[D%7C3000&sdata=Bt72paBio%2BVleZ%2FePsO%2BqcNdWjop0FSFLQGhhvPwDro%3D&reserved=0](#)> on Facebook*



INTERNATIONAL FIELD SCHOOL ON SITE FORMATION, STRATIGRAPHY, AND GEOARCHAEOLOGY IN THE ATHENIAN AGORA

Deadline: February 15, 2022

The Malcolm H. Wiener Laboratory for Archaeological Science (ASCSA) in collaboration with the ASCSA Excavations at the Athenian Agora offers a full week-long Field School on Site Formation, Stratigraphy, and Geoarchaeology in the Athenian Agora. Dr. Panagiotis (Takis) Karkanas, Director of the Wiener Laboratory, and Dr. Paul Goldberg, Senior Visiting Professor, Institut für Naturwissenschaftliche Archäologie (INA), University of Tübingen, will supervise the intensive field school. Registered students will be involved in interdisciplinary field research in the Athenian Agora primarily focused on archaeological context, geoarchaeology, and material sciences. Through field observations, laboratory analysis, and lectures, students will receive instruction in the study and analysis of archaeological sediments and deposits, as well as gain experience in the recording of stratigraphy, and the understanding of site formation processes.

Please note that some accepted participants from the postponed 2020 season will be part of the 2022 program. Therefore, a maximum of 5 additional students will be accepted for the course. Preference is given to advanced students and post-docs with a background in archaeology, and preferably some exposure to the natural sciences as well.

The cost for Room and Board is 350 euros for the entire week. Travel costs to Greece and to the site are not included.

The course will take place from May 21 to May 28, 2022. Applications should be submitted no later than February 15, 2021 via the online application form. Application materials include one paragraph explaining why the candidate is interested in participating in the course, a CV, a list of grades (unofficial transcript), and names and email addresses of two referees.

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

Textbooks: *Reconstructing Archaeological Sites* 2019 by Panagiotis Karkanas and Paul Goldberg (Wiley Blackwell), *Practical and Theoretical Geoarchaeology* 2006 by Paul Goldberg and Richard I. Macphail (Blackwell) (new edition expected in early 2022) and *Microarchaeology* 2010 by Stephen Weiner (Cambridge University Press).

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

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

Link to information online here:
<https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.ascsa.edu.gr%2Fprograms%2Finternational-field-school-on-archaeological-science&data=04%7C01%7Caegeanet%40lists.ku.edu%7C2cacbe8f9cdc4b9e6eda08d9b370b696%7C3c176536afe643f5b96636feabbe3c1a%7C0%7C0%7C637738119980383031%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6IklhaWwiLCJXVCI6Mn0%3D%7C3000&sdata=vdNmTW9RPZGhjIlEWqMLA14Pttj4xi9Qv3gwSsnilM%3D&reserved=0>

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INTERNET SITES

PODCAST - THE FOLATE DEBATE, AND REWRITING THE RADIOCARBON CURVE

Some 80 countries around the world add folic acid to their food supply to prevent birth defects that might happen because of a lack of the B vitamin—even among people too early in their pregnancies to know they are pregnant. This year, the United Kingdom decided to add the supplement to white flour. But it took almost 10 years of debate, and no countries in the European Union joined them in the change. Staff Writer Meredith Wadman joins host Sarah Crespi to discuss the ongoing folate debate.

Last year, a highly anticipated tool for dating ancient materials was released: a new updated radiocarbon calibration curve. The curve, which describes how much carbon-14 was in the atmosphere at different times in the past 55,000 years, is essential to figuring out the age of organic materials such as wood or leather. Sarah talks with Tim Heaton, senior lecturer in the School of Mathematics and Statistics at the University of Sheffield, and Edouard Bard, a professor at the College of France, about how the curve was redrawn and what it means, both for archaeology and for our understanding of the processes that create radiocarbon in the first place—like solar flares and Earth’s magnetic fields.

This week’s episode was produced with help from [Podigy](#).

doi:10.1126/science.acx9526

Please visit the site: <https://www.science.org/content/podcast/folate-debate-and-rewriting-radiocarbon-curve>

ANNOUNCING THE CULTURAL HERITAGE GAME JAM

The Cultural Antiquities Task Force (CATF) in the Bureau of Educational and Cultural Affairs (ECA) is diving into the world of videogames.

CATF and Global Game Jam, Inc. are hosting a global videogame development competition, or “game jam,” to increase awareness of threats to cultural heritage. From November 5 to 21, 2021, teams will participate in-person or virtually to create videogame prototypes and to compete for a chance to attend the Game Developers Conference in San Francisco, California in March of 2022.

The Cultural Heritage Game Jam challenges teams to create games that: Celebrate diverse cultural art, artifacts, traditions, and places; Help disrupt cultural heritage looting, theft, trafficking, and destruction; Reinforce the importance of protecting and preserving cultural heritage; and Educate about the effects of climate change on cultural heritage

Participants, or “jammers,” include game developers, students, faculty, and nongovernmental organizations, among others. Teams can register throughout the competition using this link:

https://docs.google.com/forms/d/e/1FAIpQLSddxILqWZeb_WYEx_3tZMcGMvjpLKfiPPNQRymCIXq3YSeBw/viewform

About the Cultural Antiquities Task Force Created by the State Department in 2004 at the direction of Congress, the CATF comprises federal agencies that share a common mission to disrupt cultural property trafficking in the United States and abroad.

Since its creation, the CATF has supported more than 100 domestic and international cultural property training programs. CATF is a law enforcement-focus working group of the Cultural Heritage Coordinating Committee. Both are managed by the State Department’s Cultural Heritage Center.

Please visit the site: <https://eca.state.gov/highlight/announcing-cultural-heritage-game-jam> [Go there for many embedded linx]

ARCHAEOTRAIL APP

The newly launched ArchaeoTrail App allows you to create a smartphone trail for the visitors of any archaeological site around the world free of charge – including your own site!

The Volkswagen Foundation-funded project ArchaeoTrail is headed by Dr Stephanie Döpfer of Goethe University Frankfurt, Germany. Prof. Matthias Ludwig and his team are responsible for the technical implementation. The ArchaeoTrail App aims to facilitate the distribution of information on archaeological sites around the world.

This is realised by a two-fold system consisting of a web portal for creators and a smartphone application for visitors. With the help of GPS, visitors are guided via their smartphones along a suggested route to the various points of interest of an archaeological site and provided with visual and textual information.

Our web portal offers archaeologists and other people responsible for archaeological sites the technical toolkit to create informative trails for their sites for visitors free of charge. The portal is expressly open to everyone caring for an archaeological site, whether from a private, university, or public background. Before making them publicly available, the trails undergo a review process by a designated expert review board to assure that they meet our scientific standards and general code of conduct.

If you are responsible for an archaeological site and want to know more about our portal or are even ready to make your first trail, check out our website www.archaeotrail.org.

ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

EARLY CIVILIZATIONS HAD IT ALL FIGURED OUT A CONTRARIAN ACCOUNT OF OUR PREHISTORY ARGUES THAT CITIES ONCE FLOURISHED WITHOUT RULERS AND RULES—AND STILL COULD, BY GIDEON LEWIS-KRAUS

The Dawn of Everything
A New History of Humanity
David Graeber and David Wengrow
Farrar, Straus and Giroux
Hardcover : 704 pages
ISBN-10 : 0374157359
ISBN-13 : 978-0374157357

<https://us.macmillan.com/books/9780374157357/the-dawn-of-everything>

“The Dawn of Everything” aims to expand our political imagination by exploring how human beings once lived together. Illustration by Rob Sato

Moments of sociopolitical tumult have a way of generating all-encompassing explanatory histories. These chronicles either indulge a sense of decline or applaud our advances. The appetite for such stories seems indiscriminate—tales of deterioration and tales of improvement are frequently consumed by the same people. Two of Bill Gates’s favorite soup-to-nuts books of the past decade, for example, are Steven Pinker’s “The Better Angels of Our Nature” and Yuval Noah Harari’s “Sapiens.” The first asserts that everything has been on the upswing since the Enlightenment, when we learned that rational argument was preferable to religious superstition and wanton cudgelling. The second concludes that everything was more or less O.K. until about twelve thousand years ago, when we first beat our swords into plowshares; this innocent decision, which must have seemed a good idea at the time, heralded an era of administrative hierarchy, state-sanctioned violence, and the unchecked proliferation of carbohydrates. Perhaps what readers like Gates find valuable in these books has less to do with the purported shape and direction of history than with the broad assurance that history has a shape and a direction.

Both stories, after all, adhere to a model of history that’s at once teleological (driven by specific forces to arrive at the foreordained present) and discontinuous (such magical things as farming and rationality emerged from the woodwork, unlocking successive stages of developmental maturity). They generally agree that the crucial rupture divided some original state of nature from the grand accession of civilization. Their arcs of irrevocable decline or compulsory progress are variations on themes that were given their most recognizable modern elaborations by Thomas Hobbes and Jean-Jacques Rousseau. Pinker takes up the Hobbesian notion that early human existence was a brutish war of all

against all. Harari takes rather literally Rousseau’s thought experiment that we were born free and rushed headlong into our chains. (“There is no way out of the imagined order,” Harari writes.

“When we break down our prison walls and run towards freedom, we are in fact running into the more spacious exercise yard of a bigger prison.”) In both accounts, guilelessness and egalitarianism are exchanged for knowledge and subordination; the only real difference lies in the cost-benefit assessments of that trade.

About a decade ago, the anthropologist and activist David Graeber, who died suddenly last year, at the age of fifty-nine, and the archeologist David Wengrow began to consider, in the wake of Occupy Wall Street, how they might contribute to the burgeoning literature on inequality. Not inequality of income or wealth but inequality of power: why so many people obey the orders of so few. The two scholars came to see, however, that to inquire after the “origins” of inequality was to defer to one of two myths—roughly, Hobbes’s or Rousseau’s—based on a deeply ingrained and deeply misleading fantasy of the human career. The product of their extended collaboration, “The Dawn of Everything: A New History of Humanity” (Farrar, Straus & Giroux), is a profuse and antic account of how we came to take that old narrative for granted and why we might be better off if we let it go.

The consensus version of the story begins with the appearance of the first anatomically modern humans, about two hundred thousand years ago. For approximately a hundred and ninety thousand years, or about ninety-five per cent of our existence as a species, we lived in small bands of hunter-gatherers, following migratory herds and foraging for wild nuts and berries. These cohorts were small enough, and the demands of resource procurement and allocation were sufficiently minor, that decisions were face-to-face affairs among intimates.

Despite the lurking menace of large cats, these early hunter-gatherers didn’t have to work particularly hard to fulfill their caloric needs, and they passed their ample leisure hours cavorting like primates. The order of the day was an easy egalitarianism, mostly for want of other options.

Twelve thousand years ago, give or take, the static pleasures of this long, undifferentiated epoch gave way to history proper. The hunter-gatherer bands lucky enough to find themselves on the flanks of the Zagros Mountains, or the eastern shores of the Mediterranean, began herding and farming. The rise of agriculture allowed for permanent settlements, which, growing dense, became cities. Urban commerce demanded division of labor, professional specialization, and bureaucratic oversight. Because wheat, unlike wild berries or the hindquarters of an aurochs, was a storable, countable good that appeared on a routine schedule, the selfish administrators of inchoate kingdoms could easily collect taxes, or tributes. Writing, which first emerged in the service of accounting, abetted the sort of control and surveillance upon which primitive racketeers came to depend. Where hunter-gatherers had hunted and gathered only enough to meet the demands of the day, agricultural communities created history’s first surpluses, and the extraction of tributes propped up rent-seeking élites and the managerial pyramids—not to mention standing armies—necessary to maintain their privilege. The rise of the arts, technology, and monumental architecture was the upside of the creation and immiseration of a peasant class.

From roughly the Enlightenment through the middle of the twentieth century, these developments—which came to be known as the Neolithic Revolution—were seen as generally good things. Societies were categorized by evolutionary stage on the basis of their mode of food production and economic organization, with full-fledged states taken to be the pinnacle of progress.

But it was also possible to think that the Neolithic Revolution was, all in all, a bad thing. In the late nineteen-sixties, ethnographers studying present-day hunter-gatherers in southern Africa argued that their “primitive” ways were not only freer and more egalitarian than the “later” stages of human development but also healthier and more fun. Agriculture required much longer and duller working hours; dense settlements and the proximity of livestock, as well as monotonous diets of cereal staples, encouraged malnutrition and disease. The poisoned fruit of grain cultivation had, in this telling, led to a cycle of population growth and more grain cultivation. Agriculture was a trap. Rousseau’s thought experiment, long written off by conservative critics as romantic nostalgia for the “noble savage,” was resuscitated, in modern, scientific form. It might have taken three or four decades for these insights to make their way to TED stages, but the paleo diet became a fundamental requirement of any self-respecting Silicon Valley founder.

For Graeber and Wengrow, this basic story, whether relayed in a triumphal or a defeatist register, is itself a trap. If we accept that the rise of agriculture meant the rise of the state—of political élites and intricate structures of power—then all we can do is tinker around the edges. Even if we regard the Paleolithic era as a garden paradise, we know that our reentry is forever barred. For one thing, the requirements of hunting and gathering could support only some trivial fraction of the earth’s current population. A life under government control now seems inescapable.

“The Dawn of Everything” is a lively, and often very funny, anarchist project that aspires to enlarge our political imagination by revitalizing the possibilities of the distant past. Superficially, it resembles other exhaustive, synoptic histories—it’s encyclopedic in scope, with sections introduced by comically baroque intertitles—but it disavows the intellectual trappings of a knowable arc, a linear structure, and internal necessity. As a stab at grandeur stripped of grandiosity, the book rejects the logic of technological or ecological determinism, structuring its narrative around our ancestors’ improvisatory responses to the challenges of happenstance. The result is an almost hallucinatory vision of the human epic as a series of idiosyncratic digressions. It is the story of how we made it up as we went along—of how things could have been different and, perhaps, still might be.

Drawing on new archeological findings, and revisiting old ones, Graeber and Wengrow argue that the granaries-to-overlords tale simply isn’t true. Rather, it’s a function of an extremely low-resolution approach to time. Viewed closely, the course of human history resists our favored schemata. Hunter-gatherer communities seem to have experimented with various forms of farming as side projects thousands of years before we have any evidence of cities. Even after urban centers developed, there was nothing like an ineluctable relationship between cities, technology, and domination.

The large town of Çatalhöyük, for example, on the Konya Plain in present-day Turkey, was settled around 7400 B.C. and seems to have been occupied for approximately fifteen

hundred years—which, the authors note, is “roughly the same period of time that separates us from Amalafrika, Queen of the Vandals, who reached the height of her influence around AD 523.” The settlement was home to about five thousand people, but it had neither an obvious center nor any communal facilities. There weren’t even streets: households were densely packed together and accessed via roof ladders. The residents’ living areas were marked by a “distinctly macabre sense of interior design,” with narrow rooms outfitted with aurochs skulls and horns, along with raised platforms that encased the remains of up to sixty of the households’ dead ancestors. It was, as far as we know, one of the first large settlements to have practiced agriculture: the citizens derived most of their nutrition from cereals and beans they grew, as well as from domesticated sheep and goats. For a long time, all of this was taken together as a key example of the “agricultural revolution” in action, and the material remnants were interpreted to support the old story. Corpulent female figurines, assumed to be part of fertility rituals, were found in what were understood to be proto-religious shrines of some sort—the first indications of organized cultural systems.

In the past three decades, however, new archeological methods have disturbed many of these long-standing assumptions. The “shrines” were, Graeber and Wengrow tell us, just regular houses; the female figurines could be the discarded Barbie dolls of the Anatolian Neolithic, but they could also be a way of honoring female elders. The community seems to have supported itself for a thousand years with various forms of agriculture—floodplain farming and animal husbandry—without ever having committed itself to new forms of social or cultural organization. From what we can derive from wall murals and other expressive residues, Graeber and Wengrow say, “the cultural life of the community remained stubbornly oriented around the worlds of hunting and foraging.”

So what was actually going on in Çatalhöyük? Graeber and Wengrow interpret the evidence to propose that the town’s inhabitants managed their affairs perfectly well without the sort of administrative structures, royal or priestly, that were supposedly part of the agricultural package. “Despite the considerable size and density of the built-up area, there is no evidence for central authority,” the authors maintain. “Each household appears more or less a world unto itself—a discrete locus of storage, production and consumption. Each also seems to have held a significant degree of control over its own rituals.” Some houses appear to have been more lavishly furnished with aurochs horns or prized obsidian (which was brought in from Cappadocia, more than a hundred miles away), but there is no sign of elite neighborhoods or marks of caste consolidation. Different forms of social organization likely prevailed at different times of year, with greater division of labor necessary for cultivation and hunting in the summer and fall, followed by something more equitable—and, perhaps, matriarchal—during the winter.

Çatalhöyük isn’t the only site that calls into question the presumption that the Neolithic era was patterned on a single civilizational kit. Graeber and Wengrow report that some cities thrived long before they showed signs of hierarchical systems—such as temples and palaces—and some never developed them at all. “In others, centralized power seems to appear and then disappear,” they write. “It would seem that the mere fact of urban life does not, necessarily, imply any form of political organization.”

If cities didn’t lead to states, what did? Not any singular arrow of history, according to Graeber and Wengrow, but, rather, the gradual and dismal coalescence of otherwise unrelated, parallel processes. In particular, they think it involved the extension of

patriarchal domination from the home to society at large. Their account of how household structures were transformed into despotic regimes requires some unconvincing hand-waving, but throughout they emphasize that any given process can be historically contingent without being simply inexplicable. The guiding principle of “The Dawn of Everything” is that our remote ancestors—not to mention certain present-day Indigenous groups long dismissed as living relics of superannuated barbarians—must be viewed as self-conscious political actors.

Historical ruptures cannot be reduced to technological novelties or geographical constraints, even if those factors played crucial roles. They arose from our own choices and actions.

Graeber and Wengrow point to moments in the distant past in which they see instances of deliberate refusal: communities that weighed the advantages and disadvantages of one ostensibly evolutionary step or another (pastoralism, royal domination) and decided that they liked their current odds just fine. The communities that built Stonehenge had once adopted ways of cultivating cereal from Continental Europe, but recent research suggests that they returned to hazelnut collection around 3300 B.C. Various ecological theories have been floated to explain the sudden collapse, around 1350 A.D., of the brutal dynasty of Cahokia (in present-day Illinois), then the largest city in the Americas north of Mexico, but Graeber and Wengrow propose that the proto-empire’s subjects—who lived under constant surveillance and the threat of mass executions—simply defected en masse. Land wasn’t scarce, and they just walked away.

Where some groups adopted and abandoned different arrangements over time, others maintained a repertoire of assorted practices to suit fluctuating purposes. Modern ethnographic treatments of Indigenous communities describe an astonishing level of social plasticity (available to us, perhaps, in the highly etiolated form of Burning Man and other “temporary autonomous zones”). In a 1903 essay, the anthropologists Marcel Mauss and Henri Beuchat described the routine organizational reversals in Inuit communities. These groups spent their summers fishing and hunting in small cohorts under the possessive—and coercive—authority of a single male elder. Graeber and Wengrow describe how then, as the winter brought an influx of walruses and seals to the shore, “the Inuit gathered together to build great meeting houses of wood, whale rib and stone,” where “virtues of equality, altruism and collective life prevailed. Wealth was shared, and husbands and wives exchanged partners.” It’s impossible to say whether such practices were designed or preserved to diminish the threat of permanent domination, but that was one of their effects.

Such groups weren’t ignorant of whatever else was on offer; they were frequently in contact with other societies, took stock of their habits, and sought to define themselves in contrarian ways, in a rather underexplored process that, following the anthropologist Gregory Bateson, Graeber and Wengrow call “schismogenesis.” In the Pacific Northwest, men of rank among the Kwakiutl held lavish, greasy potlaches and took war captives as slaves; their neighbors to the south of the Klamath River, the Yurok, prized restraint and self-denial, and committed themselves to modes of subsistence that rendered slavery, which they found morally repugnant, unnecessary.

When divergences in cultural values occurred within societies rather than between them, the result could take the form of revolutionary sentiment. Consider the city of

Teotihuacan, which was founded around 100 B.C.—more than a thousand years before the rise of the Aztecs—and was almost certainly the largest city in the pre-colonial Americas.

The metropolis was first constructed on a monumental scale, with the kind of pyramids and palaces that indicate social hierarchy. At a certain point, however, the people of Teotihuacan decided against investing in more fancy villas. Instead, Graeber and Wengrow write, “the citizens embarked on a remarkable project of urban renewal, supplying high-quality apartments for nearly all the city’s population, regardless of wealth or status.” They accomplished all of this without wheeled vehicles, sailing ships, animal-powered traction, or advanced metallurgy. Perhaps most important was that, although they were in contact with the monarchical Mayan societies nearby, the people of Teotihuacan flourished for some three centuries without submitting to the rule of anything like a king.

Except, we learn in passing, some archeologists believe that they did. (The scholarly debate on the matter turns in part on the interpretation of a few inscriptions in the Mayan city of Tikal.) Though Graeber and Wengrow have marshalled a vast amount of archeological evidence, they acknowledge that much of what anyone has to say about ancient societies is speculative. Their hope is that, even if some of their examples remain dubious, the accumulated weight of recent findings—and the more inventive assortment of political organization they imply—establishes the glib tendentiousness of Big History. As they put it, “We are at least trying to see what happens when we drop the teleological habit of thought.”

Big History, to be sure, has long been out of favor in academic circles. Although Graeber and Wengrow can be a little self-congratulatory, they do point out that one of the first things you learn in an introductory course in anthropology or archeology is that pat appeals to cultural evolution are retrograde and silly.

Critiques of grand narratives have been important to the modern self-image of these fields—in part as penance for having once been happy to serve the priorities of empire, peddling “civilization” as a gift to the “primitives.” One consequence, however, is that wholesale synthetic accounts of human history tend to be written in the extravagantly roughshod mode of Harari’s “Sapiens” or Jared Diamond’s “Guns, Germs, and Steel.” (Graeber and Wengrow neglect to mention their strongest rivals: the science fictions of writers such as Kim Stanley Robinson.)

At the same time, Graeber and Wengrow know better than to limit “The Dawn of Everything” to a litany of counterexamples. In the late nineteen-sixties, the anthropologist Clifford Geertz worried that his discipline had gained a reputation for simple negation—a message encapsulated in the phrase “Not on Easter Island.” In other words, there were holes in every story: you could always puncture some “high-wrought” theory with a shard of anomalous data from the remote place where you did your fieldwork. Yet when anthropology was reduced to “spiteful ethnography,” Geertz argued, it put itself in the business of “disapproving of intellectual constructions but not of creating, or perhaps even of understanding, any.” Graeber and Wengrow seem to agree. It’s all well and good, they might think, to murmur “Not on Easter Island” when a popularizer gets too expansive or confident, but they worry that if people aren’t offered an alternative framework they will still default to some version of the pernicious cultural-

evolution myth—and accept that the familiar hierarchies of governance are simply the price of sophistication.

Consider the widespread assumption, which Graeber long contested, that larger human societies can't resolve collective-action problems without top-down authority. In 2014, he and the tech investor Peter Thiel debated the issue onstage. Thiel argued that modern life is much too convoluted for truly democratic participation, which is why his model for innovation was the miniature suzerainty of the startup. As a quasi-libertarian, he admitted some sympathy for Graeber's political anarchism, but he didn't see how it could ever work: "Could you build the Manhattan Project, could you build Apollo, could you get someone to the moon in a radically decentralized chaotic system? Or do you need coordination and planning?"

Curiously, there are moments in "The Dawn of Everything" in which Graeber and Wengrow seem to yield to this way of thinking; they suggest, at one point, that we pay less attention to Egypt's heroic pyramid-building Old and Middle Kingdoms and more to its apparently helter-skelter "intermediate" periods, during which masterpieces might have gone unbuilt but people did not have to fear being summarily enslaved or buried alive as part of a funeral entourage. Still, it's by contending at length with the prejudices of scale—the expectation that there is some natural upper bound on the number of people who can live and work together without significant coordination from above—that the book signals its broader ambitions. "In the standard, textbook version of human history, scale is crucial," the authors write. "The tiny bands of foragers in which humans were thought to have spent most of their evolutionary history could be relatively democratic and egalitarian precisely because they were small." We therefore persuade ourselves that, given the problem of strangers, we need "such things as urban planners, social workers, tax auditors and police."

Yet pre-agricultural people erected great testaments to their ways of life in the absence of those structural supports—at Göbekli Tepe, also in Turkey, as well as on the Ukrainian steppe and in the Mississippi Delta. And post-agricultural societies could maintain systematic achievements without administrators to run them. "It turns out that farmers are perfectly capable of co-ordinating very complicated irrigation systems all by themselves," Graeber and Wengrow say. "Urban populations seem to have a remarkable capacity for self-governance in ways which, while usually not quite 'egalitarian,' were likely a good deal more participatory than almost any urban government today."

Ancient emperors mostly "saw little reason to interfere, as they simply didn't care very much about how their subjects cleaned the streets or maintained their drainage ditches." About eight thousand years ago, the villagers of Tell Sabi Abyad, in present-day Syria, saw to a variety of complex tasks—pasturing the flocks; sowing, harvesting, and threshing grain; weaving flax; making beads; and carving stones—that presumably required extensive inter-household cooperation, yet everyone lived in uniform dwellings. Though writing wasn't invented for another three thousand years, a scheme of geometric tokens, stored and archived in a central if nondescript depot, had been put in place to monitor resource administration. The archeological remains of the village, remarkably preserved by a catastrophic fire that baked its structures of mud and clay, show no signs of caste division or a presiding authority.

Graeber and Wengrow hope that, once we grasp how ancient mega-sites (in Ukraine or in Jomon-era Japan) could grow large and manifold without a literate bureaucracy, or the way early literate societies (Uruk, in Mesopotamia) might have managed the trick of participatory self-governance, we might renew and expand our own cramped notions of what's politically tenable. We could come to detach progress from obedience. As they put it, “Humans may not have begun their history in a state of primordial innocence, but they do appear to have begun it with a self-conscious aversion to being told what to do. If this is so, we can at least refine our initial question: the real puzzle is not when chiefs, or even kings and queens, first appeared, but rather when it was no longer possible to simply laugh them out of court.”

Graeber and Wengrow's dearest aspiration is to quicken that laughter once again. “Nowadays, most of us find it increasingly difficult even to picture what an alternative economic or social order would be like,” they write. “Our distant ancestors seem, by contrast, to have moved regularly back and forth between them. If something did go terribly wrong in human history—and given the current state of the world, it's hard to deny something did—then perhaps it began to go wrong precisely when people started losing that freedom to imagine and enact other forms of social existence.”

This wasn't a matter of sheer forgetfulness, they say. It was by design. At least some of the Indigenous inhabitants of the Americas, they tell us, were bewildered and appalled by the strange European custom of giving and taking orders. Their judgments were widely circulated in the Europe of the early Enlightenment, where Indigenous people were often featured in dialogues meant to criticize the status quo. At the time, they were typically dismissed as the rhetorical sock-puppetry of canny European heretics. For how could “Natives” credibly engage with political constitutions or deliberate over consequential decisions?

“The Dawn of Everything” makes a persuasive case that what was passed off as Indigenous criticism of European political thinking was, in fact, Indigenous criticism of European political thinking. These Indigenous objections could be safely deflected only if they were seen as European ventriloquism, not ideas from another adult community with alternative values. “Portraying history as a story of material progress, that framework recast indigenous critics as innocent children of nature, whose views on freedom were a mere side effect of their uncultivated way of life and could not possibly offer a serious challenge to contemporary social thought,” Graeber and Wengrow write.

The whole symbolic apparatus of cultural evolution aimed to make freedom—which they define as the freedom to move, the freedom to disobey orders, and the freedom to imagine less hierarchical ways of organizing ourselves—seem archaic and perilous. When we speak of the onset of social inequality, we're accepting the idea that real freedom is the plaything of children. The species grew up, and grew out of it.

Peter Thiel wonders why we don't yet live in the future of our dreams.

Graeber and Wengrow think the first step forward is a reminder of the past we deserve.

Please visit the site: <https://www.newyorker.com/magazine/2021/11/08/early-civilizations-had-it-all-figured-out-the-dawn-of-everything> [See also

<https://www.nytimes.com/2021/11/04/opinion/graeber-wengrow-dawn-of-everything-history.html>

ISSUE 16 OF THE SCIENCE MUSEUM GROUP **JOURNAL NOW PUBLISHED**

Features a strong strain of research from within the Science Museum Group. Robert Gwynne brings together railway and computer histories by looking at the long engagement of the railways with data driven technologies; Abigail Wilson looks at the impact of Joseph Whitworth's legacy on Manchester's built environment; and Alex Rose discusses a collection of seismographs originally located at Eskdalemuir Observatory in Scotland. Charles Ormrod looks at the history of mechanised production in luxury goods while Pippi Carter-Hornsby discusses a methodology for capturing and preserving the disappearing (and often tacit) knowledge required to operate large working exhibits.

In other articles, Curator Imogen Holmes-Roe discusses the history and direction of the Whitworth gallery, whilst David H Lee contributes a study of audience responses to a health exhibition in the USA with objectives to change behaviours.

Our growing reviews section allows discussion of the crucial contemporary issues faced by museums. Here Subhadra Das discusses Corrine Fowler's Green Unpleasant Land while Photography Off the Scale (eds Tomáš Dvořák and Jussi Parikka) is reviewed by Surya Bowyer.

Please visit the site: <http://journal.sciencemuseum.ac.uk/issues/autumn-2021/>

RADIOCARBON: A KEY TRACER FOR STUDYING EARTH'S DYNAMO, CLIMATE SYSTEM, CARBON CYCLE, AND SUN

T. J. Heaton, E. Bard, C. Bronk Ramsey, M. Butzin, P. Köhler, R. Muscheler, P. J. Reimer, L. Wacker
Science • 5 Nov 2021 • Vol 374, Issue 6568 • [DOI: 10.1126/science.abd7096](https://doi.org/10.1126/science.abd7096)

Abstract

Radiocarbon (^{14}C), as a consequence of its production in the atmosphere and subsequent dispersal through the carbon cycle, is a key tracer for studying the Earth system. Knowledge of past ^{14}C levels improves our understanding of climate processes, the Sun, the geodynamo, and the carbon cycle. Recently updated radiocarbon calibration curves (IntCal20, SHCal20, and Marine20) provide unprecedented accuracy in our estimates of ^{14}C levels back to the limit of the ^{14}C technique (~55,000 years ago). Such improved detail creates new opportunities to probe the Earth and climate system more reliably and at finer scale. We summarize the advances that have underpinned this revised set of radiocarbon calibration curves, survey the broad scientific landscape where additional detail on past ^{14}C provides insight, and identify open challenges for the future.

Please visit the site: <https://www.science.org/doi/10.1126/science.abd7096>

DANA ISLAND: THE GREATEST SHIPYARD **OF THE ANCIENT MEDITERRANEAN,** **EDITED BY HAKAN ÖNİZ**

Paperback; 174x245mm; 232 pages; 311 figures, 18 plates (colour throughout). 759 2021.

Available both in printed and e-versions.

Printed ISBN 9781789699517.

Epublication ISBN 9781789699524.

Dana Island: The Greatest Shipyard of the Ancient Mediterranean presents the dramatic archaeological discoveries from Dana Island, off the coast of Rough Cilicia in southern Turkey, where underwater investigations and surface survey in advance of excavation have revealed nearly 300 ancient rock-cut slipways, the largest number of such naval installations discovered to date. Further slipways have been lost to erosion or await excavation. The slipways accommodated a range of different sizes of warship and are identified as ship-sheds, grouped within a shipyard area, behind which are various structures seen as workshops used in shipbuilding, as well as living spaces, military and religious buildings, managerial facilities, barn areas for animals, baths and dock areas, shops, villas, columned areas, watchtowers, and many other buildings whose functions cannot yet be understood. The majority are mortarless stone structures, and some of the architectural forms show resemblances to Iron Age masonry. The volume presents and analyses the slipways, their use and possible dating. Water supply is discussed, and cisterns documented. Further chapters focus on the tombs found on the island, its geology, plant usage, and the geoarchaeology of the island's structures. Extensive contextual sections review the island's geographical situation and ancient naval history. Finally, computer modelling is used to produce stunning 3D visualisations of the ancient shipyard and naval base.

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WINE JARS AND JAR MAKERS OF CYPRUS: THE ETHNOARCHAEOLOGY OF PITHARIA **BY GLORIA LONDON**

Nicosia: Astrom Editions 2020. Pp. 240. €25.44.

ISBN: 9789925745555 (cloth).

Reviewed by Sophocles Hadjisavvas

American Journal of Archaeology, January 2022 Vol. 126, No. 1, pp. E000-00.
<https://doi.org/10.1086/718067> Published open access online 11 November 2021

London's latest book on wine jars and jar makers supplements her earlier studies on the Cypriot jars and the people, mostly female, behind them. What is new in the present study is the incorporation and detailed interpretation of an immense contribution made by Knud Jensen, a Danish police officer whose diaries are presented in London's publication. Jensen undertook his research on pitharia (from the ancient Greek pithos) and other Cypriot agricultural tools during his service with the United Nations Peacekeeping Force in Cyprus between 1964 and 1971. In his effort to acquire agricultural tools for the ethnographic collections of the Danish Museum, he was encouraged to become a "pot detective" (9), and he returned to Cyprus on various occasions to continue his research. Jensen kept diaries of all his daily activities, providing valuable information on the island's most recent history. His exhaustive descriptions of pots, accompanied by drawings and photos, and his oral interviews with the people who either produced or owned the jars provide important data for researchers.

What is more valuable, however, is his search for the stories behind the pots and his ability to trace the individuals and families responsible for their production. London, with her immense knowledge of jar manufacture, has taken advantage of Jensen's diaries, properly interpreted all the available information, and built upon it to produce a fascinating account for both the specialist and the lay person. In this respect, I fully agree with Stuart Swiny's statement "others could have published Jensen's diaries, but none could have done it with Gloria's sensitivity and background knowledge" (xxii).

Part I of the narrative deals mostly with Jensen's biography, his first years in Cyprus and his initial ethnographic studies, which gradually developed into more specific research on the huge wine jars that were scattered around the countryside, mostly in deserted villages across the Troodos Massif. He was the first to appreciate the historical value of the information inscribed on the jars and, after carefully recording their inscriptions, he searched for the people who produced them (5).

He also noticed the presence of bread stamps on various parts of the jars, a practice that resembles the use of impressed scenes on pithoi that I excavated at the Late Bronze Age site of Alassa. This long-lasting tradition may have been associated with a wish for a successful fermentation, the most critical step in wine production. I noticed a similar practice at the sixth-century CE site of Byala, on the west coast of the Black Sea, where a wine fermentation jar bears an inscription in Greek with the words "help me God"

enclosed by a cross and a bunch of grapes. The site specialized in wine production and the manufacture of wine jars to satisfy local needs. A similar continuity in the methods used for the manufacture and decoration, and in the ideology of wine jars in Cyprus is observed by both Jensen and London. For example, techniques described by Columella in the Roman period and by medieval travelers for coating the interior of wine fermentation jars were practiced well into the middle of the 20th century (89).

Part 2 of the book is mostly dedicated to ceramic ethnoarchaeology and the possible association between the information inscribed on jars and the history of settlements, as well as to the archaeological implications of London's observations. In reviewing London's narrative in this section of the book, following the publication of my excavations at Alassa which raised many questions related to the impressed pithoi, I realize the importance of ethnography in interpreting archaeological material. Some of those questions might now be answered with greater credibility, in view of the continuity that is often a feature of the island's conservative communities.

Of interest also is Jensen's attempt to relate the dating of wine jars and other vessels with the establishment of settlements, a suggestion questioned by London (144). Thanks to the recent publication of the 1572 Ottoman census of Cyprus (I.P. Theodoridis, *Η Πρώτη Οθωμανική Απογραφή της Κύπρου (1572)*, E. Epifaniou Publications 2021), we now have an independent source for dating settlement foundations. A good example is provided by the village history of Agios Demetrios (Marathasa). The earliest securely dated jar in the village dates to 1859, while oral tradition places the establishment of the settlement between 1800 and 1824/1830 (142–43). We now know, however, that the village existed during the 1572 census (Theodoridis 2021, 77).

London's *Wine Jars and Jar Makers of Cyprus* is a further contribution to her beloved subject—the huge jars and ceramic utensils produced primarily by female potters to satisfy the everyday needs of an agrarian society that has changed little since the Bronze Age. Her extensive use and interpretation of Jensen's diaries and her own research combine to provide a handbook for both ethnographers and archaeologists, and at the same time a fascinating narrative for the layman on a self-sufficient way of life that persisted well into the middle of the 20th century.

The abundant illustrations, both line drawings and photographs (more than 134), constitute a special merit of the book; in particular, the drawings with measurements do much to illuminate the written account.

Of great value is the mass of material prepared by Jensen and presented here for the first time. London's deep insights into the manufacture of the jars, her wide knowledge of the eastern Mediterranean region, and her (and Jensen's) active use of oral information obtained from local people combine to make this book a welcome contribution to the history of the rural society of Cyprus.

Available at: <http://shop.astromeditations.se/en/spb/pb188.html>

Or contact: galondon18@gmail.com

Please visit the site: <https://www.journals.uchicago.edu/doi/10.1086/718067>

EIAHΣEΙΣ - NEWS RELEASE

A CHILD OF DARKNESS

The first partial skull of a child of Homo naledi begins to give us insight into all stages of life of this remarkable species

An international team of researchers, led by Professor Lee Berger from the University of the Witwatersrand, Johannesburg, South Africa (Wits University) has revealed the first partial skull of a Homo naledi child that was found in the remote depths of the Rising Star cave in Johannesburg, South Africa.

Describing the skull and its context in two separate papers in the Open Access journal, PaleoAnthropology, the team of 21 researchers from Wits University and thirteen other universities announced the discovery of parts of the skull and teeth of the child that died almost 250,000 years ago when it was approximately four to six years old.

The first paper, of which Professor Juliet Brophy of Wits and Louisiana State University is lead author, describes the skull, while the second paper, of which describes the context of the area and circumstances in which the skull was discovered.

The child was found in an extremely remote passage of the Rising Star Cave System, some 12 meters beyond the Dinaledi Chamber, the original site of discovery of the first Homo naledi remains that were revealed to the world in 2015.

“Homo naledi remains one of the most enigmatic ancient human relatives ever discovered,” says Professor Lee Berger, project leader and Director of the Centre for Exploration of the Deep Human Journey at Wits University and an Explorer at Large for the National Geographic Society. “It is clearly a primitive species, existing at a time when previously we thought only modern humans were in Africa. Its very presence at that time and in this place complexifies our understanding of who did what first concerning the invention of complex stone tool cultures and even ritual practices.”

Almost 2000 individual fragments of more than two dozen individuals at all life stages of Homo naledi have been recovered since the Rising Star cave system was discovered in 2013.

“This makes this the richest site for fossil hominins on the continent of Africa and makes naledi one of the best-known ancient hominin species ever discovered,” says John Hawks, a biological anthropologist and lead author of a previous study on the fossil skeleton of a male naledi nicknamed “Neo” that was also found at the Rising Star cave.

The skull of the child presented in the current study was recovered during further work in the cramped spaces of the cave in 2017. The child’s skull was found alone, and no remains of its body have been recovered. The team have named the child “Leti” (pronounced Let-e) after the Setswana word “letimela” meaning “the lost one”. Leti’s skull consists of 28 skull fragments and six teeth and when reconstructed shows the frontal orbits, and top of the skull with some dentition.

“There were no replicating parts as we pieced the skull back together and many of the fragments refit, indicating they all came from one individual child,” says Darryl de Ruiter, a palaeoanthropologist who previously led a study of the adult skull of *H. naledi* and who is a co-author on the paper.

“This is the first partial skull of a child of *Homo naledi* yet recovered and this begins to give us insight into all stages of life of this remarkable species,” says Juliet Brophy, who led the study on Leti’s skull and dentition.

The discovery of a hominin child skull is an extremely rare find in the fossil record as juvenile remains tend to be thin and extremely fragile. “Having skull remains associated with teeth of the same individual is extremely important for understanding the growth and development of this species,” says Christopher Walker, an expert in growth and development.

Leti’s brain size is estimated at around 480 to 610 cubic centimetres.

“This would have been around 90% to 95% of its adult brain capacity,” says Debra Bolter, co-author on the paper and a specialist in growth and development. “The size of Leti’s brain makes it very comparable to adult members if the species found so far,” says Bolter.

It has yet to be established how old Leti’s remains are. However, since other fossils of *Homo naledi* were found in the nearby Dinaledi Chamber and dated to between 335 and 241 thousand years ago, Tebogo Makhubela, part of the geological team investigating the discovery believes that it is likely that Leti is from a similar period, based on preservation and proximity.

Leti’s remains were discovered in a tight passage that measures only 15 centimetres wide and 80 centimetres long and was located just beyond an area named the “Chaos Chamber”.

“The area where Leti was found is part of a spiderweb of cramped passages,” says Maropeng Ramalepa, a member of the exploration team responsible for bringing the remains to the surface. Marina Elliott, one of the original “Underground Astronauts” in the first Rising Star expedition that originally uncovered *Homo naledi* and the leader of the excavation team that recovered Leti described the challenge of excavating Leti as “very difficult”. “This was one of the more challenging sites with hominin fossils we have had to get to in the Rising Star system,” says Elliott.

Since its discovery the Rising Star cave system has become one of the most prolific sites of discovery for hominin fossils in the world.

Berger says that work is continuing throughout the cave system and that soon new discoveries are likely to shed further light on whether these chambers and passages are in fact a burial ground of *Homo naledi*, as the team originally hypothesised.

“I do not believe there is another site quite like Rising Star,” says Steve Churchill, a palaeoanthropologist and co-author on both papers.

“This is now the third locality we have described from this system with *naledi* remains, and we know through exploration that there are other localities.”

With no signs of carnivore damage or damage made by scavenging, and no evidence of the skull having been washed into the narrow passage, the team does not know how Leti's skull came to rest, alone, in such a remote and inaccessible part of the system. The authors hypothesise that it is likely other members of its species were involved in the skull reaching such a difficult place.

“The discovery of a single skull of a child, in such a remote location within the cave system adds mystery as to how these many remains came to be in these remote, dark spaces of the Rising Star Cave system,” says Berger. “It is just another riddle among many that surround this fascinating extinct human relative.”

Please visit the site: <https://www.eurekaalert.org/news-releases/933695> [Go there for pix]

THE SECRET HOW ETROG AND LION ENDED UP ON 1,300-YEAR-OLD MOSAIC IN JERICHO, BY ROSSELLA TERCATIN

The magnificent artwork was opened to the public for the first time last week.

Why is a citrus fruit – also known in Hebrew as etrog – featured in the magnificent mosaic paving the main hall of a caliphate castle in Jericho?

According to Dr. Lev Arie Kapitaikin, a lecturer in Islamic Art at Tel Aviv University and Shenkar College, the choice to include the fruit in the artwork remains somewhat mysterious but it does show the deep interconnections between the Abrahamic faiths.

“The etrog is considered an enigmatic fruit in Islam,” he said.

“Nobody really knows what it means, perhaps it was a symbol of fertility, perhaps even of dynastic succession. Here it is depicted with a knife, near the throne, a location that highlights its importance. It is interesting to see how a Jewish emblem also became important in Islam.”

The mosaic was unveiled by the Palestinian Authority Minister of Tourism and Antiquities Rula Ma’ay’a after a long restoration funded by the government of Japan for \$12 million. The ceremony was also attended by Japanese Ambassador to Lebanon and former ambassador for Palestinian affairs, Okubo Takeshi. Since then, for the first time the site is open to the public. Ma’ay’a expressed hope that the artifact will boost tourism in the Palestinian Authority.

Hisham’s Palace dates to the first half of the 8th century CE, only about 100 years after the death of Mohammed.

The palace was built under the Umayyad dynasty, the first major Muslim dynasty.

The Umayyads ruled over a vast empire - including the area of modern Israel - for about a century.

The site is located north of Jericho in the Palestinian Authority, in a building attributed to the tenth Umayyad Caliph, Hishām ibn ‘Abd al-Malik, who erected several palaces and castles in the region.

“We are not talking about a capital palace, but rather a recreational one,” Kapitaikin said. “It was incredibly sumptuous. The mosaic covers the main hall of the palace where the throne stood.”

The site, which is also known as Khirbat al-Mafjar, was first discovered in 1894 and subsequently excavated between 1934 and 1948 under archaeologists Dimitri Baramki, who served as Chief Inspector of Antiquities and later as Director of Antiquities in the British Mandate of Palestine and Robert Hamilton, who was also Director of Antiquities in the Mandate for a period.

Some restoration and archaeological work were carried out as Jordan ruled over the area before 1967, and the work resumed under the Palestinian Department of Antiquities and Cultural Heritage in 1996, according to Dr. Donald Whitcomb an Associate Professor in Islamic Archaeology at the University of Chicago who conducted further excavations in the area in recent years and wrote several publications on the topic.

The magnificent features of the building included some 150 acres of gardens irrigated through an aqueduct, a great hall, a bath, an entry hall with a porch.

While the palace was likely destroyed when an earthquake struck the area in 748, according to Whitcomb, the site was reoccupied and rebuilt and remained in use until the end of the 13th century.

The magnificent stone mosaic is composed of 38 large tiles for an area of 826 square meters.

“We are talking about one of the largest mosaic surfaces from the ancient world that have survived intact,” Kapitaikin noted. “Its depictions offer some insights into the life and pleasures of the Umayyad princes.”

“These elements, which began to emerge in that period, will become the dominant motifs of Islamic art,” Kapitaikin said.
Another mosaic adorns a smaller room.

“This room was devoted to the private pleasures of the kings,” Kapitaikin noted. “Here we can see a mosaic featuring a lion attacking a gazelle. In the past, it was interpreted as a symbol of war, of Islam vanquishing its enemies, but the currently opinion among scholars is that it represents Islamic poetry which focused on the pleasures of love and hunting. The room might have been the place where they read this kind of refined and delicate poetry.”

Traditionally Islam discourages the depiction of humans or animals.

“In the mosaic in the great hall, there are no living creatures represented, and Islam prohibits to do so, but while in religious and public buildings this prohibition was upheld, in private and intimate contexts many living creatures were depicted,” Kapitaikin said. “It was a popular custom.”

The expert noted that mosaic art was very common in that time period across cultures, but few mosaics dating back to the Umayyads survive, among them the ones in the Dome of the Rock and in the Great Umayyad Mosque in Damascus.

“I think it is really wonderful that the mosaic can finally be admired by the public,” Kapitaikin concluded. “It is a truly remarkable experience.”

Please visit the site: <https://www.jpost.com/archaeology/an-etrog-a-lion-and-all-the-secrets-of-1300-year-old-mosaic-in-jericho-684015> [Go there for pix]

ANCIENT HISTORY SHOWS HOW WE CAN CREATE A MORE EQUAL WORLD, BY DAVID GRAEBER AND DAVID WENGROW

[Mr. Graeber and Mr. Wengrow are the authors of the forthcoming book, “The Dawn of Everything: A New History of Humanity,” from which this essay is adapted. Mr. Graeber died shortly after completing the book.]

Most of human history is irreparably lost to us. Our species, *Homo sapiens*, has existed for at least 200,000 years, but we have next to no idea what was happening for the majority of that time. In northern Spain, for instance, at the cave of Altamira, paintings and engravings were created over a period of at least 10,000 years, between around 25,000 and 15,000 B.C. Presumably, a lot of dramatic events occurred during that period. We have no way of knowing what most of them were.

This is of little consequence to most people, since most people rarely think about the broad sweep of human history anyway. They don’t have much reason to. Insofar as the question comes up at all, it’s usually when reflecting on why the world seems to be in such a mess and why human beings so often treat each other badly — the reasons for war, greed, exploitation and indifference to others’ suffering. Were we always like that, or did something, at some point, go terribly wrong?

One of the first people to ask this question in the modern era was the Swiss-French philosopher Jean-Jacques Rousseau, in an essay on the origins of social inequality that he submitted to a competition in 1754. Once upon a time, he wrote, we were hunter-gatherers, living in a state of childlike innocence, as equals. These bands of foragers could be egalitarian because they were isolated from one another, and their material needs were simple. According to Rousseau, it was only after the agricultural revolution and the rise of cities that this happy condition came to an end. Urban living meant the appearance of written literature, science and philosophy, but at the same time, almost everything bad in human life: patriarchy, standing armies, mass executions and annoying bureaucrats demanding that we spend much of our lives filling out forms.

Rousseau lost the essay competition, but the story he told went on to become a dominant narrative of human history, laying the foundations upon which contemporary “big history” writers — such as Jared Diamond, Francis Fukuyama and Yuval Noah Harari — built their accounts of how our societies evolved. These writers often talk about inequality as the natural result of living in larger groups with a surplus of resources. For example, Mr. Harari writes in “*Sapiens: A Brief History of Humankind*” that, after the advent of agriculture, rulers and elites sprang up “everywhere ... living off the peasants’ surplus food and leaving them with only a bare subsistence.”

For a long time, the archaeological evidence — from Egypt, Mesopotamia, China, Mesoamerica and elsewhere — did appear to confirm this. If you put enough people in one place, the evidence seemed to show, they would start dividing themselves into social classes. You could see inequality emerge in the archaeological record with the appearance of temples and palaces, presided over by rulers and their elite kinsmen, and

storehouses and workshops, run by administrators and overseers. Civilization seemed to come as a package: It meant misery and suffering for those who would inevitably be reduced to serfs, slaves or debtors, but it also allowed for the possibility of art, technology, and science.

That makes wistful pessimism about the human condition seem like common sense: Yes, living in a truly egalitarian society might be possible if you're a Pygmy or a Kalahari Bushman. But if you want to live in a city like New York, London or Shanghai — if you want all the good things that come with concentrations of people and resources — then you have to accept the bad things, too. For generations, such assumptions have formed part of our origin story. The history we learn in school has made us more willing to tolerate a world in which some can turn their wealth into power over others, while others are told their needs are not important and their lives have no intrinsic worth.

As a result, we are more likely to believe that inequality is just an inescapable consequence of living in large, complex, urban, technologically sophisticated societies.

We want to offer an entirely different account of human history. We believe that much of what has been discovered in the last few decades, by archaeologists and others in kindred disciplines, cuts against the conventional wisdom propounded by modern “big history” writers. What this new evidence shows is that a surprising number of the world's earliest cities were organized along robustly egalitarian lines. In some regions, we now know, urban populations governed themselves for centuries without any indication of the temples and palaces that would later emerge; in others, temples and palaces never emerged at all, and there is simply no evidence of a class of administrators or any other sort of ruling stratum. It would seem that the mere fact of urban life does not, necessarily, imply any particular form of political organization, and never did. Far from resigning us to inequality, the new picture that is now emerging of humanity's deep past may open our eyes to egalitarian possibilities we otherwise would have never considered.

Wherever cities emerged, they defined a new phase of world history.

Settlements inhabited by tens of thousands of people made their first appearance around 6,000 years ago. The conventional story goes that cities developed largely because of advances in technology: They were a result of the agricultural revolution, which set off a chain of developments that made it possible to support large numbers of people living in one place. But in fact, one of the most populous early cities appeared not in Eurasia — with its many technical and logistical advantages — but in Mesoamerica, which had no wheeled vehicles or sailing ships, no animal-powered transport and much less in the way of metallurgy or literate bureaucracy. In short, it's easy to overstate the importance of new technologies in setting the overall direction of change.

Almost everywhere, in these early cities, we find grand, self-conscious statements of civic unity, the arrangement of built spaces in harmonious and often beautiful patterns, clearly reflecting some kind of planning at the municipal scale. Where we do have written sources (ancient Mesopotamia, for example), we find large groups of citizens referring to themselves simply as “the people” of a given city (or often its “sons”), united by devotion to its founding ancestors, its gods or heroes, its civic infrastructure and ritual calendar. In China's Shandong Province, urban settlements were present over a thousand years before the earliest known royal dynasties, and similar findings have emerged from the Maya lowlands, where ceremonial centers of truly enormous size — so far,

presenting no evidence of monarchy or stratification — can now be dated back as far as 1000 B.C., long before the rise of Classic Maya kings and dynasties.

What held these early experiments in urbanization together, if not kings, soldiers, and bureaucrats? For answers, we might turn to some other surprising discoveries on the interior grasslands of eastern Europe, north of the Black Sea, where archaeologists have found cities, just as large and ancient as those of Mesopotamia. The earliest date back to around 4100 B.C. While Mesopotamian cities, in what are now the lands of Syria and Iraq, took form initially around temples, and later also royal palaces, the prehistoric cities of Ukraine and Moldova were startling experiments in decentralized urbanization. These sites were planned on the image of a great circle — or series of circles — of houses, with nobody first, nobody last, divided into districts with assembly buildings for public meetings.

If it all sounds a little drab or “simple,” we should bear in mind the ecology of these early Ukrainian cities. Living at the frontier of forest and steppe, the residents were not just cereal farmers and livestock-keepers, but also hunted deer and wild boar, imported salt, flint and copper, and kept gardens within the bounds of the city, consuming apples, pears, cherries, acorns, hazelnuts and apricots — all served on painted ceramics, which are considered among the finest aesthetic creations of the prehistoric world.

Researchers are far from unanimous about what sort of social arrangements all this required, but most would agree the logistical challenges were daunting. Residents definitely produced a surplus, and with it came ample opportunity for some of them to seize control of the stocks and supplies, to lord it over the others or fight for the spoils, but over eight centuries we find little evidence of warfare or the rise of social elites. The true complexity of these early cities lay in the political strategies they adopted to prevent such things.

Careful analysis by archaeologists shows how the social freedoms of the Ukrainian city dwellers were maintained through processes of local decision-making, in households and neighborhood assemblies, without any need for centralized control or top-down administration.

Yet, even now, these Ukrainian sites almost never come up in scholarship. When they do, academics tend to call them “mega-sites” rather than cities, a kind of euphemism that signals to a wider audience that they should not be thought of as proper cities but as villages that for some reason had expanded inordinately in size. Some even refer to them outright as “overgrown villages.” How do we account for this reluctance to welcome the Ukrainian mega-sites into the charmed circle of urban origins? Why has anyone with even a passing interest in the origin of cities heard of Uruk or Mohenjo-daro, but almost no one of Taljanky or Nebelivka?

It’s hard here not to recall Ursula K. Le Guin’s short story “The Ones Who Walk Away From Omelas,” about an imaginary city that also made do without kings, wars, slaves or secret police. We have a tendency, Le Guin notes, to write off such a community as “simple,” but in fact these citizens of Omelas were “not simple folk, not dulcet shepherds, noble savages, bland utopians. They were not less complex than us.”

The trouble is just that we have a bad habit of “considering happiness as something rather stupid.”

Le Guin had a point. Obviously, we have no idea how relatively happy the inhabitants of Ukrainian mega-sites like Maidanetske or Nebelivka were, compared with the steppe-lords who covered nearby landscapes with treasure-filled mounds, or even the servants ritually sacrificed at their funerals (though we can guess). And as anyone who has read the story knows, Omelas had some problems, too.

But the point remains: Why do we assume that people who have figured out a way for a large population to govern and support itself without temples, palaces and military fortifications — that is, without overt displays of arrogance and cruelty — are somehow less complex than those who have not? Why would we hesitate to dignify such a place with the name of “city”? The mega-sites of Ukraine and adjoining regions were inhabited from roughly 4100 to 3300 B.C., which is a considerably longer period of time than most subsequent urban settlements.

Eventually, they were abandoned. We still don’t know why. What they offer us, in the meantime, is significant: further proof that a highly egalitarian society has been possible on an urban scale.

Why should these findings from the dim and distant past matter to us today? Since the Great Recession of 2008, the question of inequality — and with it, the long-term history of inequality — have become major topics for debate. Something of a consensus has emerged among intellectuals and even, to some degree, the political classes, that levels of social inequality have gotten out of hand, and that most of the world’s problems result, in one way or another, from an ever-widening gulf between the haves and the have-nots. A very small percentage of the population control the fates of almost everyone else, and they are doing it in an increasingly disastrous fashion.

Cities have become emblematic of our predicament. Whether in Cape Town or San Francisco, we are no longer shocked or even that surprised by the sight of ever-expanding slums — sidewalks crammed with makeshift tents or shelters overflowing with the homeless and destitute.

To begin reversing this trajectory is an immense task. But there is historical precedent for that, too. Around the start of the common era, thousands of people came together in the Valley of Mexico to found a city we know today as Teotihuacan. Within a few centuries it became the largest settlement in Mesoamerica. In a colossal feat of civil engineering, its inhabitants diverted the San Juan River to flow through the heart of their new metropolis. Pyramids went up in the central district, associated with ritual killing. What we might expect to see next is the rise of luxurious palaces for warrior-rulers, but the citizens of Teotihuacan chose a different path. Around A.D. 300, the people of Teotihuacan changed course, redirecting their efforts away from the construction of grand monuments and devoting resources instead to the provision of high-quality housing for the majority of residents, who numbered around 100,000.

Of course, the past cannot provide instant solutions for the crises and challenges of the present. The obstacles are daunting, but what our research shows is that we can no longer count the forces of history and evolution among them. This has all sorts of important

implications: For one thing, it suggests that we should be much less pessimistic about our future, since the mere fact that much of the world’s population now lives in cities may not determine how we live, to anything like the extent we might have assumed.

What we need today is another urban revolution to create more just and sustainable ways of living. The technology to support less centralized and greener urban environments — appropriate to modern demographic realities — already exists. Predecessors to our modern cities include not just the proto-megalopolis, but also the proto-garden-city, the proto-superblock, and a cornucopia of other urban forms, waiting for us to reclaim them. In the face of inequality and climate catastrophe, they offer the only viable future for the world’s cities, and so for our planet. All we are lacking now is the political imagination to make it happen. But as history teaches us, the brave new world we seek to create has existed before, and could exist again.

Please visit the site: <https://www.nytimes.com/2021/11/04/opinion/graeber-wengrow-dawn-of-everything-history.html>

POMPEII EXCAVATION SITE YIELDS RARE WINDOW INTO DAILY LIFE OF THE ENSLAVED, BY COLLEEN BARRY

Archeologists digging in a villa amid the ruins of the 79 AD volcanic eruption find a dormitory and storage area room, with many personal items

Archeologists in Pompeii excavating a villa amid the ruins of the 79 AD volcanic eruption that destroyed the ancient city have discovered a room that offers “a very rare insight into the daily life of slaves,” officials said Saturday.

Italy’s culture minister, Dario Franceschini, said the find was “an important discovery that enriches the knowledge of the daily life of ancient Pompeians, in particular the level of society still little known.”

The room served as both a dormitory and a storage area, officials from the Archeological Park of Pompeii said. It was discovered in a villa in the Pompeii suburb of Civita Giuliana, just a few steps from where archeologists in January discovered the remains of a well-preserved ceremonial chariot.

The room, with just one high window and no wall decorations, contains the remains of three beds made out of wood. The beds were adjustable, with two measuring 1.7 meters (nearly 5 feet, 7 inches) and one just 1.4 meters (4 feet, 7 inches), possibly indicating that a family with a child had lived there.

Nearby, a wooden chest contained metallic objects and textiles that “appear to be part of harnesses for horses,” according to the archeological park. There also was a wooden steering element for a chariot.

Chamber pots and other personal objects were under the beds, while eight amphorae — a type of container — were in a corner, suggesting storage for the household.

The villa, with a panoramic view of the Mediterranean Sea on the outskirts of the ancient Roman city, is considered one of the most significant recent finds at Pompeii. It was discovered after police came across illegal tunnels dug by alleged looters in 2017.

Archaeologists also have uncovered the skeletal remains of two people, believed to have been a wealthy man and his male slave, who were stricken by volcanic ash attempting to escape death.

Please visit the site: <https://www.timesofisrael.com/pompeii-excavation-site-yields-rare-window-into-daily-life-of-the-enslaved/> [See also <https://www.theguardian.com/world/2021/nov/06/discovery-of-pompeii-slaves-room-sheds-rare-light-on-real-roman-life>.

ARCHAEOLOGISTS FIND THEATER TOILET IN WESTERN TURKEY’S SMYRNA

At a historical theater in the ancient city of Smyrna, located within the borders of the western city of Izmir. The latrina is thought to have been used by the artists in the theater. The theater and the commode date back to around the second century B.C. and were used until the fifth century A.D., said Akın Ersoy, an archaeologist at Izmir's Katip Çelebi University and head of the excavation team.

Touting "unexpected finds" during the excavations, an Izmir Metropolitan Municipality statement cited Ersoy as saying this is the first time such a toilet facility inside a stage building has been found.

The commode in the theater, around 40 centimeters (16 inches) high, has a U-shape seating arrangement and could accommodate 12-13 people at a time. Next to it is a U-shaped trough 8-10 cm (3-4 in) deep for clean water.

Scientists believe the toilet, located in a closed area, "was used by actors working in the stage building and performing in the theater," not by audience members, said Ersoy.

Such a find in theaters in the Mediterranean region is unprecedented, he added.

The ancient city, which was established between Kadifekale and the İzmir Bay, has welcomed visitors and travelers from different cultures over the centuries. Smyrna offers fascinating views of history to modern man with its basilica, historic murals and well-protected buildings.

Please visit the site: <https://www.dailysabah.com/arts/archaeologists-find-theater-toilet-in-western-turkeys-smyrna/news> [Go there for pix]

EXQUISITE GOLD RING WITH AMETHYST STONE FOUND IN BYZANTINE YAVNE, BY ROSSELLA TERCATIN

An ancient jeweled ring was unearthed at the site of an ancient Byzantine winery in Yavne, Israel.

A unique gold ring featuring a delicate purple amethyst stone was uncovered in the excavation of a Byzantine winery complex in Yavne, the Antiquities Authority (IAA) announced.

The wine factory was used to produce the legendary regional wine, known as Gaza or Ashkelon wine after the ports from where it was exported all over the Mediterranean. The jewel was unearthed near one of the warehouses.

“The person who owned the ring was affluent, and the wearing of the jewel indicated their status and wealth,” said Dr. Amir Golani on Tuesday, an IAA expert on ancient jewelry. “Such rings could be worn by both men and women.

“Amethysts are mentioned in the Bible as one of the 12 precious stones worn by the high priest of the Temple on his ceremonial breastplate,” he added. “Many virtues have been attached to this gem [amethysts], including the prevention of the side effect of drinking, the hangover.”

According to the archaeologists, there could be a connection between this quality attributed to the stone and the location where it was found.

“Did the person who wore the ring want to avoid intoxication due to drinking a lot of wine? We probably will never know,” said Dr. Elie Haddad, the IAA director of the excavation, together with Liat Nadav-Ziv and Dr. Jon Seligman.

A large number of jars were found in the warehouse, some of them positioned upside down so as to store them or dry them before being brought to be refilled with wine “It is possible that the splendid ring belonged to the owner of the magnificent warehouse, to a foreman, or simply to an unlucky visitor, who dropped and lost their precious ring until it was finally discovered by us,” Haddad noted.

The artifact was not conclusively dated. It was found in a fill dated between the end of the Byzantine period and the beginning of the early Islamic period, around the 7th century CE. However, since similar rings – gold bands with inlaid amethysts – were common in the Roman world, the jewel could have belonged to someone living in the city as early as the third century CE.

Recently, another ancient amethyst was found in an archaeological excavation.

Dating back some 2,000 years, the stone was retrieved by volunteers sifting through soil dug in the underground drainage channel below the main road connecting the Shiloah Pool, at the outskirts of Jerusalem, with the Temple Mount.

The artifact was also likely placed on a ring. In addition, it was engraved with the figures of a bird and a branch, possibly the first depiction ever discovered of the biblical plant species known as “balm of Gilead,” or persimmon.

In the past two decades, archaeologists have found evidence of settlement in Yavne beginning as early as over 3,000 years ago.

In the same area where the Byzantine wine factory has been found – the largest from the period ever discovered in the world – the remains of another wine press were uncovered, dating back some 2,300 years, during the Persian period, testifying to the city’s long tradition in wine production, as stated in the Mishna, which mentions a vineyard in Yavne.

After the destruction of Jerusalem at the hands of the Romans in 70 CE, Raban Yohanan Ben-Zakai moved the Sanhedrin, the supreme court and legislative body in all matters of Halacha, to Yavne.

During the Byzantine period it was an important Christian town, also featuring a significant Jewish population.

Please visit the site: <https://www.jpost.com/archaeology/exquisite-gold-ring-with-amethyst-stone-found-in-byzantine-yavne-683808> [Go there for pix]

TRAPEZA: GRAVE OFFERINGS AND BRONZE SWORDS HAVE COME TO LIGHT - THE FIRST PHASE OF THE EXCAVATION SURVEY HAS BEEN COMPLETED

The first season of this year's excavation on the Trapeza plateau, eight kilometers southeast of Aegion, has been completed, bringing to light, among other things, valuable assemblages of grave gifts and bronze swords. The site has been identified as Rhyes, a city that flourished in early historical times and participated in colonization, founding Croton in Magna Graecia.

The excavation focused on investigating the Mycenaean necropolis which extends across the plateau's southwestern slope and is located on the ancient road that led to the acropolis of historical times. The tombs are chambered, carved into the soft sandy subsoil. Already during the Early Palace period of the Mycenaean world, their use was long and intensive, in parallel with the prosperity of the great centers of Mycenae, Tiryns and Pylos. Significant reuse of the tombs dates back to the 12th century B.C. when they were repeatedly reopened, being at once a place for conducting burials and complex ritual practices until the end of the Bronze Age in the 11th century BC.

The excavation of the necropolis has yielded valuable assemblages of grave gifts consisting of vases, a number of seal stones and all kinds of beads and tesserae of various materials – glass, faience, gold, carnelian and rock crystal – for the making of necklaces and ornaments such as the gold talismans shaped like bulls' heads, suggesting trade relations with the eastern Aegean and Cyprus.

The rectangular shaped chamber of tomb 8, investigated this year, presented a complex stratigraphy. In the first layer of tombs of the 12th c. BC, three burials containing stirrup jars (amphorae) were investigated in situ. The bones inside the older tombs had been removed and placed reverently and very carefully in two successive piles at the back of the chamber, in contact with the walls of the tomb. Three decorated clay alabastron flasks and an amphora found on top of these bone collections, date these first burials to the Early Palace period (14th century BC).

An exceptionally well preserved bronze sword had also been placed among the bones and offerings such as carnelian and glass beads and a clay horse figurine that accompanied these earlier burials. At the base of the pile of bones two more intact bronze swords were also found with part of their wooden grips/handles. The three swords belong to different types, namely Sandars D and E, and date back to the heyday of the Mycenaean Palace period. The presence of these weapons as well as the long spears of the same time period found during the excavation in neighbouring tombs in the Trapeza necropolis is particularly important. It is distinguished from the other necropoleis of Achaia, emphasizing the direct dependence of the local community on the powerful palace centers. The weapons are products of the palace workshops, perhaps of Mycenae, thus consistent with the genre of the homeric epos and the mythological tradition handed down to us.

According to the latter, Achaia belonged to the kingdom of Agamemnon who as ruler of Mycenae gathered the men of most value in neighbouring Aegion to discuss how the campaign against the state of Priam should take place.

The location of the Mycenaean settlement of Trapeza is still not entirely clear. Probably, during the early cycle of use of the necropolis, the settlement was situated on a hill about 100 meters south of Trapeza. This year, at the same time as researching the Mycenaean necropolis, the excavation of an area of the settlement revealed part of a building, perhaps a mansion. It is a wide rectangular chamber with a hearth in the center and typical pottery that dates it to the 17th century BC.

The excavation at Trapeza, Aigion (ancient Rhypes) is led by Dr. Andreas G. Vordos, archaeologist of the Achaia Ephorate of Antiquities. Participating in the interdisciplinary research programme of the Mycenaean necropolis and the prehistoric settlement is Elisabetta Borgna, Professor of Aegean Archaeology at the University of Udine with a group of students from the Universities of Udine, Trieste and Venice, as well as postgraduate students from Greek Universities.

The main sponsor of the excavation at Trapeza Aigialeias (ancient Rhypes) is the A.G Leventis Foundation. The excavation work is also supported by Olympia Odos SA.

Please visit the site: <https://www.archaeology.wiki/blog/2021/11/02/trapeza-grave-offerings-and-bronze-swords-have-come-to-light/> [Go there for pix]

ANCIENT OLYMPIA TO BE DIGITALLY PRESERVED

Ancient Olympia is to be digitally preserved, in a new deal between the Greek government and Microsoft. The collaboration uses artificial intelligence to map the site, and augmented reality to help restore the original home of the Olympic Games.

It will allow viewers to explore the area as it stood more than 2,000 years ago. Microsoft has ambitions to rival Facebook with its own plans for the so-called metaverse.

It recently announced Microsoft Teams metaverse for meetings and is keen to transform Minecraft and other games it owns into more immersive 3D worlds.

Its tie-up with the Greek government means people can tour the site remotely or in person with an augmented-reality mobile app. At the Olympic Museum in Athens they can use HoloLens headsets to overlay a digital version of the site.

Microsoft's augmented reality smart glasses HoloLens use multiple sensors, advanced optics, and holograms, to display information, blend with the real world or simulate a virtual world.

Among the 27 monuments to be preserved are the original Olympic Stadium, the temples of Zeus and Hera, and the workshop of the renowned sculptor Phidias.

The buildings are as close as possible to their original forms and include historical timelines of the site's changes over time, and depictions of artefacts from each period.

Through its AI for Cultural Heritage initiative, Microsoft partnered technology company Iconem, which specializes in digitising historic sites in 3D.

Using on-the-ground cameras and drones to take hundreds of thousands of images of the site, Microsoft AI then processed the pictures to create models.

"The cultural implications of this technology are endless. For the first time, visitors from around the world can virtually visit the birthplace of democracy, the ancient site of Olympia, and experience history first hand," said the Greek Prime Minister, Kyriakos Mitsotakis.

Brad Smith, the president of Microsoft said: "The project to digitally preserve Ancient Olympia is a stunning achievement in cultural heritage, bringing together humanity and cutting-edge technology to benefit the world, and empower coming generations with new ways to explore our past."

Please visit the site: <https://www.bbc.com/news/technology-59219079> [Go there for pix]

THE PHAISTOS DISK-AN ENIGMATIC ARTIFACT IN ITS CULTURAL CONTEXT, BY GIORGIA BALDACCI

The Phaistos Disc is one of the most famous Minoan artefacts, its reputation resulting from its uniqueness and its enigmatic nature. The Disc, 16 cm in diameter, is made of fine clay, apparently fired intentionally and stamped on both sides with an inscription that follows a spiral pattern. Some vertical small lines define fields, each containing groups of signs (in total 242), made from 45 different stamps, likely of metal. Scholars generally agree the signs are syllabograms, to be read following the incised spiral. What can this artifact tell us about society on Crete at around 1750 BCE? But first, is it even real?

Like the Disc itself, the circumstances of its discovery were unique and enigmatic. It was recovered in 1908 at the palatial site of Phaistos on Crete, during the fieldwork carried out by the Italian Archaeological Mission under Luigi Pernier's direction. But it was not found during regular excavations, but rather during an evening inspection by the local foreman, in Room 101 of the North-Eastern Complex, near the Palace proper. The stratum in which the object was found was a destruction level but had been disturbed during Hellenistic times.

Only recently, fieldwork carried out by Pietro Militello (2013 and 2015) clarified the context in which the Disc lay, showing that the pottery associated was largely dated to one of the first phases of the Neopalatial period, namely the beginning of Middle Minoan IIIA. This is the period of the famous palace of Knossos and not one but two local writing systems, Linear A and the even earlier Cretan Hieroglyphic system, both of which remain undeciphered.

Thanks to the Disc's uniqueness, many contrasting views and theories on its origins and nature have developed. On the one hand, the Disc has attracted enthusiasts of mysterious objects, who have dabbled in interpretations and decipherments, many of which are pseudo-scientific. On the other hand, in academia, the Disc has been sometimes regarded with suspicion, due to the lack of parallels and the unclear contextual and chronological circumstances of its discovery. More than once since its discovery – including recently – the Disc has been condemned as a forgery.

But recent research has shown that the Disc is not a completely isolated artefact in Minoan culture. The study of the Protopalatial clay artefacts of the site, in particular the relief potmarks and the impressed fine ware, has led to clues that argue that Disc is a genuine Minoan artefact, and that clarify its chronological context.

Relief potmarks are found on semi-coarse vessels from the three most important sites of the Western Mesara Plain (Phaistos, Hagia Triada, and Kommos) as well as from the palatial centre of Malia. Such marks are restricted to the Protopalatial era (19th and 18th c. BCE), and consist of elaborate motifs in relief on the external base of the vases. These likely indicated the craftsmen or workshop that produced the vessels. Among the Phaistian vases which bear a relief potmark is the handled bowl, found in 1965 in the

Casa a Sud della Rampa. The mark on this bowl bears a motif that is basically identical to sign n. 21 of the Phaistos Disc, the “comb sign.” Moreover, a very similar sign is found as an impression on a sealing from a deposit of administrative documents discovered in 1955, beneath Room 25 of the Second Palace of Phaistos.

The fact that the same “comb” motif is found three times with minor differences in the archaeological record of Phaistos helps prove that the Disc is genuine. It would have been impossible for any hypothetical forger of the Disc, found in 1908, to have used the sealing or the bowl as a source for the motif, as they were found only decades later during regular excavations.

Another argument for the Disc’s authenticity comes from a study recently carried out by Alessandro Sanavia on the Phaistian impressed fine ware. This ware is also characteristic of the Protopalatial period and is mostly found in the Western Mesara Plain, as well as in the palatial site of Knossos. Such vases are characterized by an array of stamped decorations of a single element repeated in sequence. The impressed fine ware shows an interesting parallel with the Phaistos Disc, both in its technical aspects, being impressions made by a stamping device, and for the presence of similar images in both. Sanavia was able to find striking comparanda for six Phaistos Disc signs.

Cups with stamped decorations from Phaistos. (image courtesy A. Sanavia) Comparisons between the Phaistos Disc signs and impressed ware motifs. (image courtesy A. Sanavia)

The greatest part of the Protopalatial impressed pottery at Phaistos was recovered during the excavations carried out between 1950 and 1966, while during the original campaigns by Luigi Pernier only a few impressed fragments were discovered, and these do not display relevant iconographic parallels with the Disc signs. This sequence of events means again that in 1908 the impressed ware could not have been used as a source to perpetrate a hoax.

The evidence from the Phaistian potmarks and impressed fine ware also provides important clues for dating the Disc: all the comparisons point to the very beginning of the Neopalatial period as the best fit, or around 1750 BCE. We cannot, however, exclude the possibility that the Disc was made during the last phase of the preceding Protopalatial period, Middle Minoan IIB. But what was it actually for?

The concept of ‘uniqueness’ assigned to the Phaistos Disc must be reviewed. It is true that no similar artefacts have been found in Crete or anywhere in the Aegean: the Disc remains a special artefact. But it is not utilitarian (like a gameboard), an administrative document consulted on a regular basis (like a calendar), or a something preserved temporarily for eventual disposal. The repetition of certain combinations of signs gives a strong indication that the inscription renders a text of a religious or magical nature. Moreover, the fact that the Disc had been fired intentionally, together with the unique spiral layout structure of the inscription, make it likely that this was an artifact intended for display.

Considering the Disc from an archaeological perspective, it does not appear quite as isolated as before. Given the existence of other classes of materials with similar signs, namely the Phaistian potters’ marks and impressed ware, the Disc seems to fit into the

cultural context of Phaistos during the transition from the Protopalatial to the Neopalatial period. The use of writing was well known at Phaistos, but the Disc fits also into the skilled artisanal context of local ceramics manufacture (it is first of all a clay artifact!). Moreover, it fits into contemporary sealing practices, involving the impression of designs by stamping devices. While the message itself remains unclear to us, the Disc would not have been unique to those who viewed it. That is a useful starting point for any new consideration of its message and meaning.

Giorgia Baldacci is a post-doctoral researcher at the University of Venice.

Please visit the site: <https://www.asor.org/onetoday/2021/11/phaistos-disk> [Go there for pix and better format]



NEW FINDINGS ON JORDANIAN MEGALITHS

Studies by archaeologists from the Jagiellonian University reveals new findings on the Jordanian megaliths, dating from 5,000 years ago.

The word dolmen entered archaeology when Théophile Corret de la Tour d’Auvergne used it to describe megalithic tombs in his *Origines gauloises* (1796).

Dolmens are found throughout the world, generally consisting of tomb-like structures consisting of two or more megaliths placed vertically in the ground, capped by a large flat horizontal capstone or “table”.

The researchers were studying the dolmen fields located near the village of Shawbak in the north-western edge of the Ma’an Governorate in Jordan. Excavations found traces of pottery vessels, flint tools, and bone fragments from the deceased who were likely interred.

The archaeologists were surprised to find several unfinished dolmens that were abandoned at different stages of construction, allowing the team to deduce how they were built.

Dr Piotr Kołodziejczyk said: “Thanks to primitive tools probably made of wood and simple techniques involving carving off stone blocks from the ground, lifting them and then supporting them with smaller ones, it was possible to erect these fascinating structures rather quickly.

We now need to calculate their weight in order to figure out how many builders it took. The largest of those stone blocks can weigh up to several dozen tonnes”.

The discovery of a wall surrounding the dolmens, as well as a several-metre deep well in the vicinity, has led the researchers to propose that the dolmens may have not only served as burial sites, but also places of ritualistic worship as well as landmarks.

“In one of the dolmens, we’ve found a grave and several items, most likely buried alongside the person. We hope that lab tests will allow us to determine their time of burial, sex, health and ethnicity. Maybe the discovery will bring us closer to solving the mystery of the Jordanian megaliths” added Kołodziejczyk.

Please visit the site: <https://www.heritagedaily.com/2021/11/new-findings-on-jordanian-megaliths/141965> [Go there for pix]

RESTORED HISHAM PALACE MOSAIC

Restored ancient mosaic, 1 of world's largest, unveiled at Jericho desert castle
Resembling a fine carpet, 9,000-square-foot mosaic unveiled after a \$12 million Japanese-funded restoration at the 8th century Hisham Palace

Palestinian authorities on Thursday unveiled one of the largest floor mosaics in the world, in the West Bank city of Jericho, after years of restoration.

Resembling a fine carpet, the vast, ancient mosaic covers 836 square meters (8,998 square feet) at the Hisham Palace, an Islamic desert castle dating from the eighth century. The palace and its stone mosaic, with intricate geometric patterns, were built during the reign of the Umayyads, the first hereditary Muslim dynasty, which ruled from Damascus. The palace was the winter resort of Caliph Hisham ibn Abd al-Malik, who ruled from 724 to 743 CE.

The images, seen on dozens of panels, include a lion attacking a deer to symbolize war and two gazelles which symbolize peace, as well as delicate floral and geometric designs.

Hisham Palace had lain forgotten for centuries until it was rediscovered in the 19th century and explored in the 1930s. It was then that the mosaic was uncovered beneath the dust.

But it still remained neglected until five years ago when the site was closed to visitors as a \$12 million Japan-funded restoration effort was launched.

“This mosaic contains more than five million pieces of stone from Palestine which have a natural and distinctive color,” Saleh Tawafsha, the under-secretary at the Palestinian tourism and antiquities ministry, told AFP during the unveiling ceremony.

He said he hoped that the restoration will draw tourists to Jericho.

The project included the construction of a large dome to protect the mosaic from the elements. Tourists can now view the mosaic from a new walkway suspended above it.

The project was originally supposed to be completed in 2018 but was delayed, in part because of the challenge of anchoring the dome without disturbing the archaeological remains.

The Hisham Palace near the Dead Sea covers about 150 acres (60 hectares) and comprises baths and an agricultural estate.

The Ummayad Dynasty lasted from 660 to 750 AD.

Please visit the site: <https://www.timesofisrael.com/one-of-worlds-largest-mosaics-unveiled-at-gericho-desert-castle/> [Go there for pix]

ARCHEOLOGISTS IN KURDISTAN REGION'S DUHOK DISCOVER 2,700-YEAR- OLD WINE PRESS, BY KURMANJ NHILI

The site of a 2,700-year-old winery discovered by archaeologists in the Kurdistan Region's Duhok province.

Erbil (Kurdistan 24) – Italian and Kurdish archeologists announced this week that they had identified the remains of a 2,700-year-old wine press in the Kurdistan Region's province of Duhok that dates back to the Assyrian Empire.

The site, which they say is the oldest such discovery made to date in the northern part of what was ancient Mesopotamia, is located outside the village of New Khanis, some 8 km north of Sheikhan district.

The striking find is the result of a long-term overall survey of archeological sites in Duhok, a joint effort carried out by the Duhok Antiquities Directorate and the Italian university of Udine. It began in 2012 but was interrupted as the COVID-19 pandemic interrupted such programs worldwide last year.

Archaeologists had already established the location as an ancient site of interest, but only after workers returning to the site completed some initial digging and cleaning last month did they realize they were at one of the oldest wineries ever found.

Duhok Director of Antiquities Dr. Bekas Brifkani told Kurdistan 24 that it dates back to the rule of Assyrian King Sennacherib.

He explained that it is carved directly into mountain rock, consisting of 14 reservoirs, with two larger rectangular reservoirs in which ancient laborers would press the juice from grapes, causing it to flow into other circular basins to be collected and stored in jars for fermentation.

Daniele Morandi Bonacossi, Professor of Near Eastern archaeology at the University of Udine and the director of the Kurdistan Region's Land of Nineveh Archaeological Project, told Reuters, "In the late Assyrian period, between the 8th and the 7th century BC, there was a dramatic increase ... in wine demand and in wine production," described in Assyrian texts that coincides with the age of the site.

"This is a quite unique archaeological finding," she added, "because it is the first time in northern Mesopotamia that archaeologists are able to identify a wine production area."

According to Dr. Brifkani, Duhok Antiquities Directorate has just ordered that the location be guarded while archeological teams study how rain and other factors impact the site to establish a plan for how to best protect it until a thorough excavation is completed, at which point it will likely be converted into a future local tourist attraction.

In its joint effort with the University of Udine, the Directorate has so far discovered 1,140 archeological sites in Duhok's districts of Zakho, Sumel, Sheikhan, and Bardarash, as well as 560 additional sites where it works with other academic institutions that include Germany's Tübingen and Freiburg Universities.

Please visit the site: <https://www.kurdistan24.net/en/story/26235-Archeologists-in-Kurdistan-Region%E2%80%99s-Duhok-discover-2,700-year-old-wine-press>

COP26: THE ANCIENT ORIGINS OF THE COLOUR GREEN, BY JAMES FOX

The colour green is synonymous with nature and the environmental movement – an association that goes back thousands of years, writes James Fox.

In February 1970, a ragbag of hippies and activists gathered in Vancouver, Canada to discuss a planned nuclear test on the Alaskan island of Amchitka. They eventually agreed to sail to the test site and protest against the explosion in person. At the end of the meeting, the chairman raised two fingers to the room and shouted "Peace!". After a brief pause, one young attendee responded with a now immortal line: "Let's make that a green peace". The group were so taken with the phrase that they named their first boat the Green Peace.

Over the last 50 years, the environmental movement has become so closely associated with the colour green that it's almost impossible to see a green poster, label or recycling bag without thinking about our planet's future. But though that connection is the product of a very recent crisis, its origins go back some way. We have identified green with nature and its processes for thousands of years. Indeed, the very word "green" comes from the ancient Proto-Indo-European word *ghre*, meaning "grow".

Between the eighth and 13th Centuries, Islamic philosophers and scientists wrote treatises on sustainable agriculture, pollution and wildlife conservation, and compiled a bill of rights for animals

The human species, which emerged in the verdant forests and savannas of Africa about 300,000 years ago, has a special biological bond with green. Our eyes might even have evolved specifically to see the chlorophyll in plants. Unlike most mammals, who are red-green colour blind, we and other primates developed a third cone cell. This additional photoreceptor enabled our ancestors to spot ripe red and yellow fruits against a backdrop of green foliage, and to distinguish different green leaves from each other. In daylight conditions, human eyes are more sensitive to green than any other hue.

With the advent of agriculture, we started to use green as a symbol for nature and its processes. Archaeologists have recently found an extraordinary hoard of green beads and pendants in the Levant, dating back some 10,000 years. The researchers believe that these objects, many of which had come from hundreds of miles away at great cost, were chosen because they resembled young leaves and might have been used by early farmers to invoke rainfall or fertilise crops.

The ancient Egyptians, who were farming the banks of the Nile from about 8000 BCE, likewise identified their crops with green. Their term for the colour was *wadj*, which also meant "flourish", and was represented in hieroglyph by the flowering stalk of a papyrus plant.

Egyptian painters often depicted their god of agriculture, Osiris – who was responsible for flooding the Nile's banks, filling the soil with nutrients and pushing the first green shoots up through the fields – as a bright green being.

'Green thoughts'

All over the world, people communed with nature through green materials. Jade, for instance, was used to make objects that would guarantee a successful harvest. The Maya buried their leaders with jade death masks for precisely this reason. One such object, made between 660 and 750 AD in modern-day Mexico, depicts an unknown ruler surrounded by plant symbolism. His intimidating face is flanked by two flowers, his headdress swells into a green mountain, and two sprouts of maize point towards the future. The mask implies that its wearer will, like Osiris, infuse the earth with fertility, ensuring that his living subjects thrive.

Few cultures respected nature like those of the Islamic world. More than a millennium before the rise of the environmental movement, the Quran was instructing Muslims to look after their habitats. In extraordinarily prescient words, it describes humans as temporary stewards of the ecosystem, advising them not to disturb the delicate balance of creation by excessive consumption or unnecessary destruction. Between the eighth and 13th Centuries, Islamic philosophers and scientists even wrote treatises on sustainable agriculture, pollution and wildlife conservation, and compiled a bill of rights for animals.

It shouldn't come as surprise, then, that Muslims were fond of green. Muhammad thought it was the most beautiful colour of all, akin to a visual oasis in a largely brown Middle Eastern desert. "Three things of this world take away sadness," he is said to have remarked: "water, greenery, and a beautiful face". The Quran, meanwhile, described paradise itself as a lush and well-irrigated garden, dominated by orchards of supernaturally green trees. The text used a unique adjective to denote their special hue: madhamatan. It is the only word in the Quran's shortest verse.

Green is no longer just a hue; it has become a political agenda, a way of life

A 16th-Century Persian image in which the hero Rostam sleeps while his horse fights off a lion is notable for its depiction of foliage
(Credit: The Trustees of the British Museum)

Western societies took longer to embrace the beauty of nature, and by extension, green. But by the second half of the Middle Ages, European writers were infusing the colour with their new-found faith in the landscape, connecting it to fertility, growth, spring, hope and joy.

In one 15th-Century text, the French herald Jean Courtois couldn't contain his enthusiasm for the colour of chlorophyll: "There is nothing in the world more pleasant than the beautiful verdure of fields in blossom, broad-leafed trees covered in foliage, banks of the rivers where the swallows come and bathe, stones that are green in colour, like precious emeralds," he wrote. "What is it that makes April and May the most pleasant months of the year? It is the verdure of the fields, which prompts the small birds to sing and to praise spring and its delightful gay green livery."

By the end of the 17th Century, English poets were beginning to realise, as we do today, that green spaces can be profoundly therapeutic. Andrew Marvell's much-loved poem *The Garden* is a hymn to the curative capacities of the colour. "No white nor red was ever

seen so amorous as this lovely green," he wrote. Marvell went on to describe his imagined garden as a place of peace and escapism – one that can replace our worldly worries with, as he so memorably put it, a "green thought in a green shade".

New beginnings?

In recent years – and particularly now, as COP26 unfolds in Glasgow – most of our "green thoughts" are tainted with fears of ecological disaster. Since that raucous meeting in Vancouver in early 1970, the colour has become the official label of the environmental movement.

There are now more than a hundred recognised "Green" parties around the world, which have together turned the colour into a defining ideology of our times, comparable in some ways to "conservatism", "socialism" or "liberalism". Green is no longer just a hue; it has become a political agenda, a way of life.

Cultural figures have spearheaded this movement from the start. The artist Joseph Beuys helped found the world's first national "Green Party", die Grünen, in Germany in January 1980, and played a major role in physically greening the world, planting 7,000 oak trees around the German city of Kassel from 1982. The British artist David Nash has spent the last four decades making plant-based sculptures in North Wales. Ash Dome, a circular vaulted space made from 22 carefully trained ash trees, has been growing since 1977. It was initially conceived as an act of ecological optimism. "We were killing the planet," Nash has recalled. "Ash Dome was a long-term commitment, an act of faith".

Joseph Beuys helped found the world's first national Green Party and planted 7,000 oak trees around the German city of Kassel from 1982
(Credit: Swen Pförtner/dpa/Alamy Live News)

Not everyone was so hopeful. In the late 1990s and early 2000s, the Icelandic-Danish artist Olafur Eliasson released large quantities of uranine (a fluorescent yellow-green dye) into waterways around the world without warning, turning rivers and streams lurid green. Green River was widely interpreted through an ecological lens. Critics couldn't help but be reminded of the millions of tonnes of waste that enters the world's waters every day, its colour a caustic allusion to the verdant habitats they pollute.

Other artists are simply inspired by the uplifting beauty of nature, as their ancestors had been before them. Towards the end of his life, Howard Hodgkin loaded a thick brush with emerald-green paint, and then, in one bold motion, sketched a voluptuous looping form across a wooden panel. The finished image might at first sight look abstract, but it depicts something with which all of us are deeply familiar: it is a leaf – bright, fresh and undulating with life.

Towards the end of his life, the abstract painter Howard Hodgkin produced Leaf, an abstract sweep of emerald-green that vibrates with vitality (Credit: Howard Hodgkin)

While the future of our planet remains uncertain, many scientists are convinced that leaves, and the miraculous green pigment that lurks within them, will prove to be a decisive weapon in our battle against climate change. This is as it should be. After all, for early farmers waiting for shoots to emerge from the soil, for desert-dwelling Muslims

dreaming of paradise, and for modern-day activists determined to bring about a sustainable future, green was, and is, a colour of hope – the hope that, after a long, cold winter or a drought-ridden summer, the arrival of chlorophyll will herald a new beginning.

The World According to Colour: A Cultural History by James Fox is out now.

Please visit the site: <https://www.bbc.com/culture/article/20211108-cop26-the-ancient-origins-of-the-colour-green> [Go there for pix]



NEW RESEARCH IS SOLVING MYSTERIES LINKED TO THE LA ALMOLOYA BURIAL SITE AND REVEALING A GENETIC HISTORY OF AN ANCIENT EUROPEAN PEOPLE, BY JENNIFER PINKOWSKI

This year, archaeologists announced the discovery of a remarkable, 3,700-year-old double burial in Murcia, Spain. Skeletons of a man and a woman were draped in silver — earrings, bracelets, rings and, most notably, a silver diadem that had once gleamed on the woman’s head.

The burial site, and particularly the crown and other fineries interred with the woman, hinted at a premodern European culture in which women might have held considerable power. The skeletons were unearthed in a large ovoid jar in La Almoloya, a key settlement of the El Argar culture, which is one of the earliest examples of a society in Europe with a ruling bureaucracy, geopolitical boundaries and other hallmarks of an advanced state.

Although the gender politics of El Argar continue to be debated, a pair of complementary research projects are solving mysteries at this burial site. One has given faces to the woman, the man and others buried at La Almoloya, while the other is filling out an intriguing genetic history for the El Argar people.

Joana Bruno, a doctoral student at the Autonomous University of Barcelona, created digital facial representations of 36 people buried at La Almoloya. At the burial site, she said, “we not only have most of the facial portion of the skulls complete, but we also have the mandible, which is a very important portion of what constitutes the lower contour of the face.” The research is part of her dissertation, and the findings have not yet been published in a peer-reviewed journal.

Using a combination of facial reconstruction methods, anatomical knowledge and computer software, Ms. Bruno created a series of faces that are gray-toned and rendered in profile, their distinctive noses and ears made more prominent by their lack of hair. The reconstructions have intentionally neutral facial expressions to enable comparisons.

“We are trying to use these faces to see if the resemblance between certain traits could point us towards a shared genetic relationship” among the bodies, Ms. Bruno said.

The silver-rich woman died around 1,700 B.C., during the last phase of the El Argar culture. The upper portion of her skull didn’t survive the millenniums, but a short video by Ms. Bruno depicts her with a long narrow nose and thick silver earlobe plugs. Digital facial reconstruction of the man buried beside her (known as AY38/2) shows he had a recessed jaw, or retrognathism. A girl buried nearby (AY30/2) had the same trait.

Ms. Bruno proposed that the two were related — and genomic analysis proved her right. The man was the girl’s father.

“The fact that AY38/2 is the father of AY30/2 gives further support to retrognathism as a relevant marker of Argaric populations,” said Cristina Rihuete Herrada, a professor of prehistory at the Autonomous University of Barcelona and one of the discoverers of the burial site.

Ms. Bruno also modeled the face of a boy found at the burial site. As she digitally fleshed him out, his unusually wide-set eyes emerged.

The condition, hypertelorism, can be caused by a number of genetic disorders.

Understanding the genetic relationships of the Almoloya bodies to others across the Iberian Peninsula was the goal of another study, published on Wednesday in *Science Advances*. Researchers analyzed the genomes of 67 people buried at La Almoloya, including the silver-crowned woman, and another 33 buried at the Argaric site of La Bastida. The researchers then compared them with the genomes of nearly 200 people found across what are now Spain and Portugal, spanning the years 3,300 B.C. to 1,000 B.C.

This period includes the transition from the Copper Age to the Bronze Age around 2,200 B.C. It was a time of social upheaval across China, the Near East, Egypt and Europe that may have been incited by a century of intense climate change, during which environments became much drier.

On the lower Iberian Peninsula, the delineation between the two ages is especially sharp. Copper Age sites contain monumental funerary structures, fortified mega-settlements and artifacts that originated in far-off places.

But this lifestyle was largely abandoned in the early Bronze Age. The El Argar favored large hilltop settlements like La Almoloya, and their burials were more intimate, with just a person or two interred. Their pottery, specialized weapons and bronze, silver and gold artifacts were distinctly different.

The researchers found that Argaric genetics reflected this turnover. Based on DNA extracted from teeth and cranial bones, they discovered that after the transition from the Copper Age to the Bronze Age, the El Argar had genetic links to a population in Central Europe known as the steppe people.

The researchers also found a surprising gender divide across the Argaric sites.

Based on their mitochondrial DNA, passed from mother to child, the women and girls were mostly descended from local people. Yet the men and boys were overwhelmingly related to the steppe people, and had virtually no genetic inheritance from the local people. The men and boys, tracked through their Y chromosomes, belonged to a genetic population now among the most common in Western Europe, but which was relatively new to the Iberian Peninsula 4,200 years ago. About a century after their arrival, these steppe-descended men replaced the local Iberian men entirely — and had many children with the local women.

As researchers studied these genomes, another gender difference emerged as well.

“Males have many relatives at the site, whereas the females have less,” said Vanessa Villalba-Mouco, a postdoctoral researcher at the Max Planck Institute for the Science of Human History in Germany and an author of the study.

Of the 30 adult female genomes that researchers sequenced at La Almoloya, not one woman was related to any other woman. They had children — such as the infant daughter of the silver-crowned woman — but they were seemingly otherwise on their own.

The site contains no evidence of colonization or violence, but it also contains no easy explanation for these genetic relationships.

“We don’t know if that is the result of men becoming widows and having sequential spouses or, much the contrary, polygamic practices,” Dr. Rihuete-Herrada, a co-author of the genetic study, said.

But the researchers don’t think the genetic discovery contradicts the idea that women held some power in El Argar. One possibility, Dr. Rihuete-Herrada said, is that women in different settlements sent “their daughters as an alliance with other groups that are run equally along female lines.” The only other Argaric silver diadems were found with women.

David Reich, an expert in ancient DNA at Harvard Medical School, said that such a nearly complete Y chromosome turnover could have happened when powerful local women formed alliances with foreign men.

“Maybe they say, ‘Oh, there’s these elite foreign men who have culture or religion or some degree of military power or lands.’ And so there’s a complete or partial rejection of the local male population,” said Dr. Reich, whose data in a 2019 study on the genomic history of the Iberian Peninsula was used in the current research.

While the study focuses on population genetics at a regional scale, there are details about a few individuals in the data, too. Phenotype analysis suggests that most of them had brown eyes, brown or black hair and generally medium-toned skin. A few were redheads.

And researchers also found evidence of genetic disorders. One infant girl was found to have Trisomy X, or three X chromosomes, which is linked to a number of disorders. Their burials, however, were typical for La Almoloya. The woman with the silver crown, for instance, had the richest tomb as well as a shortened, fused spine and a stunted left thumb.

“What is important here is that people potentially impaired were not treated differently and certainly not excluded,” Dr. Rihuete-Herrada said.

The next step in their research is to try to establish family links between the people at La Almoloya based on their locations, housing environments and burials, which will inform their understanding of the Argaric social structure, including whether it was patrilineal or matrilineal, Dr. Rihuete Herrada said.

Volker Heyd, a professor of prehistoric archaeology at the University of Helsinki, said genetically based kinship studies like these signaled a “clear revolution” in our understanding of human connections.

“So far, kinship could only have been assessed with ethnographic research or a little bit of historical records,” said Dr. Heyd, who was not involved in the study. But now, he said, scientists can study “patterns sometimes going back over thousands of years that are still visible.”

Dr. Villalba-Mouco is also sending the phenotype data from her study to Ms. Bruno, so she can add eye, skin and hair color to her gray reconstructions.

Ms. Bruno said she felt “quite privileged to be the first person to see their faces emerging from the skulls after so many years.”

Please visit the site: <https://www.nytimes.com/2021/11/17/science/la-almoloya-spain.html> [Go there for pix]

ARCHAEOLOGISTS UNVEIL WORLD'S OLDEST JEWELRY IN MOROCCO

Archaeologists revealed the world's oldest jewelry in Morocco, showcasing perforated seashells dating back as much as 150,000 years.

The shells, assumed to have formed necklaces and bracelets, were discovered in the Bizmoune cave near the coastal resort of Essaouira.

They were dated as 142,000-150,000 years old, according to researcher Abdeljalil Bouzougar.

"This discovery has enormous implications for the history of humanity," he said, adding that it suggested the owner was using language.

"These are symbolic objects, and symbols, unlike tools, can only be transmitted through language," Bouzougar added.

"So this raises the question: does this discovery imply the existence of a language used to communicate between these groups or with members of other groups?"

Speaking at a press conference organized by the culture ministry, Bouzougar said similar ornaments had been found across the Middle East and Africa, dating back between 35,000 and 135,000 years.

"These people searched for the same type of seashell despite the existence of many other types," he said.

"This shows that they shared something. Maybe there was even a language," he added.

"These objects travelled over huge distances."

He also noted that Morocco was the site of some of the oldest Homo sapiens remains discovered to date: five individuals who died some 315,000 years ago and were discovered in 2017.

Bouzougar's team included researchers from Morocco's National Institute of Archaeology and Cultural Heritage (INSAP) as well as the University of Arizona in the United States and France's LAMPEA research institute.

The discovery came after archaeologists in Morocco in September identified clothes-making tools fashioned from bone dating back 120,000 years, the oldest ever found.

Please visit the site: <https://www.dailysabah.com/life/history/archaeologists-unveil-worlds-oldest-jewelry-in-morocco> [Go there for pix]

OH DEER! ARCHAEOLOGISTS REVEAL CULINARY TASTE OF PREHISTORIC ISRAELIS, BY ROSSELLA TERCATIN

New research on animal remains in Qesem Cave suggests that early humans selected their hunting grounds based on their gastronomic preferences and need for specific supplies.

Hundreds of thousands of years ago, early humans living in the area of the modern State of Israel were aware that what animals ate influenced the taste of their meat of the quality of their hide, and chose their hunting grounds based of their culinary preferences and needs for supplies, new research based on remains uncovered at the site of Qesem Cave has suggested.

A group of Israeli and Spanish experts analyzed hundreds of animal remains uncovered in the cave, especially teeth, and understood that different areas of the site were devoted to different activities – such as butchering, extracting bone marrow or treating the skins. In addition, they were surprised to find out that the animals processed in these areas, despite belonging to the same species, were characterized by different diets, according to Tel Aviv University Professor of Prehistoric Archaeology Ran Barkai.

“Qesem Cave was visited by early humans beginning around 400,000 years ago and up to 200,000 years ago,” he said. “It was a very interesting period in terms of human cultural and biological evolution because we are talking about a human type that came right after Homo Erectus, the common ancestor of Sapiens and Neanderthal, and just before them.

“This period was characterized by many technological innovations, including the beginning of the use of fire,” he said.

Located in the Samaria Hills, the cave remained sealed and not accessed until the year 2000 when it was uncovered by chance. It, therefore, offers a range of very well-preserved artifacts and traces of Paleolithic life distributed through 11 meters of archaeological layers.

Thousands of animal remains were found, mostly of fallow deer and horses, including many skulls and teeth.

“Teeth are especially interesting because based on their wear it is possible to understand what kind of food the animal consumed and, in some cases, also during which season of the year it was hunted,”

Barkai said.

THE CAVE was not permanently occupied but was still very organized – and season after season, for years if not tens of thousands of years, its residents maintained the same organization.

“There were several fireplaces. Some areas were devoted to manufacturing stone tools, some areas to processing animal hides, others to breaking animal bones to extract bone marrow and so on,” Barkai said.

The researchers found out that in different areas of the caves, the animals were hunted in different seasons, therefore the cave was used for long periods of the year, at least several months long.

“What was totally unexpected was that animals brought to specific areas of the cave had a specific diet,” Barkai noted. “For example, we discovered that fallow deer who ate only leaves were brought to the central fireplace of the cave. At the same time, the fallow deer found where hides were processed also ate branches and grass. This pattern is recognizable in different areas of the site.”

According to Barkai, animals who presented similar diets were hunted in the same hunting grounds.

“Our interpretation is that those early humans chose where to go hunting based on the specific benefit that the animals from there could offer them, including in terms of food preferences,” he noted.

“In other words, the food that the animals ate influenced the resources humans wanted to extract from them: They knew that meat from a certain area where deer ate leaves would have a certain kind of flavor, while deer which consumed other forms of vegetation would present different qualities.

“Their knowledge of the environment where they lived was much more sophisticated than we envisioned,” he said.

For the future, the researchers are working to understand more about how the dietary practices of animals affected their potential in terms of what early humans were looking for in them.

“We would like to uncover more about how the food fallow deer and horses were eating influenced their qualities and how humans considered them.”

Please visit the site: <https://www.jpost.com/archaeology/oh-deer-archaeologists-reveal-culinary-taste-of-prehistoric-israelis-684970> [Go there for pix]

WHY DID ANCIENT EGYPTIAN PHARAOHS STOP BUILDING PYRAMIDS? BY OWEN JARUS

For more than a millennia, Egyptian pharaohs had pyramids constructed and often were buried beneath or within the massive monuments.

Egyptian pharaohs constructed pyramids between the time of King Djoser (reign 2630 to 2611 B.C.), who built a step pyramid at Saqqara, to the time of King Ahmose I (reign 1550 to 1525 B.C.), who built the last known royal pyramid in Egypt at Abydos.

These iconic pyramids displayed the pharaohs' power, wealth and promoted their religious beliefs. So why did the ancient Egyptians stop building pyramids shortly after the New Kingdom began?

In ancient Egypt, pyramid construction appeared to wane after the reign of Ahmose, with pharaohs instead being buried in the Valley of the Kings near the ancient Egyptian capital of Thebes, which is now modern-day Luxor. The Theban Mapping Project notes on their website that the earliest confirmed royal tomb in the valley was built by Thutmose I (reign 1504 to 1492 B.C.). His predecessor Amenhotep I (reign 1525 to 1504 B.C.) may also have had his tomb built in the Valley of the Kings, although this is a matter of debate among Egyptologists.

Why stop?

It's not entirely clear why pharaohs stopped building royal pyramids, but security concerns could have been a factor.

"There are plenty of theories, but since pyramids were inevitably plundered, hiding the royal burials away in a distant valley, carved into the rock and presumably with plenty of necropolis guards, surely played a role," Peter Der Manuelian, an Egyptology professor at Harvard University, told Live Science in an email.

"Even before they gave up on pyramids for kings, they had stopped placing the burial chamber under the pyramid. The last king's pyramid — that of Ahmose I, at Abydos — had its burial chamber over 0.5 km [1,640 feet] away, behind it, deeper in the desert," Aidan Dodson, an Egyptology professor at the University of Bristol, told Live Science in an email.

One historical record that may hold important clues was written by a man named "Ineni," who was in charge of building the tomb of Thutmose I in the Valley of the Kings. Ineni wrote that "I supervised the excavation of the cliff tomb of his majesty alone — no one seeing, no one hearing." This record "obviously suggests that secrecy was a major consideration," Ann Macy Roth, a clinical professor of art history and Hebrew and Judaic studies at New York University, told Live Science in an email.

The natural topography of the Valley of the Kings could explain why it emerged as a favored location for royal tombs. It has a peak now known as el-Qurn (sometimes spelled

Gurn), which looks a bit like a pyramid. The peak "closely resembles a pyramid, [so] in a way all royal tombs built in the valley were placed beneath a pyramid," Miroslav Bárta, an Egyptologist who is vice rector of Charles University in the Czech Republic, told Live Science in an email.

For Egyptian pharaohs the pyramid was important as it was a place "of ascension and transformation" to the afterlife, wrote Mark Lehner, director and president of Ancient Egypt Research Associates, in his book "The Complete Pyramids: Solving the Ancient Mysteries" (Thames and Hudson, 1997).

The topography of Luxor, which became the capital of Egypt during the New Kingdom (1550 to 1070 B.C.) may also have played a role in the decline of pyramid construction. The area is "far too restricted in space, with also lots of lumps and bumps," Dodson said. In other words, the ancient capital may have been too small and architecturally challenging to serve as the home for new pyramids.

Religious changes that emphasized building tombs underground are another possible reason the Egyptians ditched grand pyramids. "During the New Kingdom, a concept of the night journey of the king through the Netherworld became extremely popular, and this required sophisticated plans of the tombs hewn in bedrock below ground," Bárta said. The underground tombs hewn into the Valley of the Kings fit this concept well.

While pharaohs stopped building pyramids, wealthy private individuals continued the practice. For example a 3,300 year-old tomb at Abydos, which was built for a scribe named Horemheb, had a 23-foot-high (7 meters) pyramid at its entrance, archaeologists announced in 2014.

During the first millennium B.C., pyramid building also became popular in Nubia, an area that includes what is now Sudan and parts of southern Egypt. The Nubians built pyramids for both royalty and private individuals. How many they built is not clear, Lehner noted in his book that there are about 180 royal pyramids while recent archaeological research reveals that there were many more pyramids constructed for private individuals. The rulers of Nubia continued building pyramids until around 1,700 years ago.

Originally published on Live Science.

Please visit the site: <https://www.livescience.com/why-ancient-egyptians-stopped-building-pyramids?fbclid=IwAR0xBDNEIxybpfzyVfBLwIXNima5uv-fS5txY-Gt9SOtgBQ0GAKXoeydvLw>

A BRIEF SCIENTIFIC HISTORY OF GLASS, **BY CAROLYN WILKE**

Featuring ingots, shipwrecks and an international trade in colors, the material's rich past is being traced using modern archaeology and materials science.

Today, glass is ordinary, on-the-kitchen-shelf stuff. But early in its history, glass was bling for kings.

Thousands of years ago, the pharaohs of ancient Egypt surrounded themselves with the stuff, even in death, leaving stunning specimens for archaeologists to uncover. King Tutankhamen's tomb housed a decorative writing palette and two blue-hued headrests made of solid glass that may once have supported the head of sleeping royals. His funerary mask sports blue glass inlays that alternate with gold to frame the king's face.

In a world filled with the buff, brown and sand hues of more utilitarian Late Bronze Age materials, glass — saturated with blue, purple, turquoise, yellow, red and white — would have afforded the most striking colors other than gemstones, says Andrew Shortland, an archaeological scientist at Cranfield University in Shrivenham, England. In a hierarchy of materials, glass would have sat slightly beneath silver and gold and would have been valued as much as precious stones were.

But many questions remain about the prized material. Where was glass first fashioned? How was it worked and colored, and passed around the ancient world? Though much is still mysterious, in the last few decades materials science techniques and a reanalysis of artifacts excavated in the past have begun to fill in details.

This analysis, in turn, opens a window onto the lives of Bronze Age artisans, traders and kings, and the international connections between them.

The Amarna Letters, clay tablets carrying the cuneiform correspondence of ancient kings and excavated at Tell el-Amarna in modern-day Egypt, include references to glass. A number from the Canaanite ruler Yidya of Ashkelon (like these shown) include one that comments on an order of glass for Pharaoh: “As to the king, my lord's, having ordered some glass, I herewith send to the king, my lord, 30 (“pieces”) of glass.

Moreover, who is the dog that would not obey the orders of the king, my lord, the Sun from the sky, the son of the Sun, whom the Sun loves?” The Trustees of the British Museum

Glass from the past

Glass, both ancient and modern, is a material usually made of silicon dioxide, or silica, that is characterized by its disorderly atoms. In crystalline quartz, atoms are pinned to regularly spaced positions in a repeating pattern. But in glass, the same building blocks — a silicon atom buddied up with oxygens — are arranged topsy-turvy.

Archaeologists have found glass beads dating to as early as the third millennium BCE. Glazes based on the same materials and technology date earlier still. But it was in the Late Bronze Age — 1600 to 1200 BCE — that the use of glass seems to have really taken off, in Egypt, Mycenaean Greece and Mesopotamia, also called the Near East (located in what's now Syria and Iraq).

Unlike today, glass of those times was often opaque and saturated with color, and the source of the silica was crushed quartz pebbles, not sand. Clever ancients figured out how to lower the melting temperature of the crushed quartz to what could be reached in Bronze Age furnaces:

They used the ash of desert plants, which contain high levels of salts such as sodium carbonate or bicarbonates. The plants also contain lime — calcium oxide — that made the glass more stable. Ancient glassmakers also added materials that impart color to glass, such as cobalt for dark blue, or lead antimonate for yellow. The ingredients melded in the melt, contributing chemical clues that researchers look for today.

“We can start to parse the raw materials that went into the production of the glass and then suggest where in the world it came from,” says materials scientist Marc Walton of Northwestern University in Evanston, Illinois, coauthor of an article about materials science and archaeological artifacts and artwork in the 2021 Annual Review of Materials Research.

But those clues have taken researchers only so far. When Shortland and colleagues were investigating glass's origins around 20 years ago, glass from Egypt, the Near East and Greece appeared to be chemical lookalikes, difficult to distinguish based on the techniques available at the time.

The exception was blue glass, thanks to work by Polish-born chemist Alexander Kaczmarczyk who in the 1980s discovered that elements such as aluminum, manganese, nickel and zinc tag along with the cobalt that gives glass an abyssal blue hue. By examining the relative amounts of these, Kaczmarczyk's team even tracked the cobalt ore used for blue coloring to its mineral source in specific Egyptian oases.

Picking up where Kaczmarczyk left off, Shortland set out to understand how ancient Egyptians worked with that cobalt ore. The material, a sulfate-containing compound called alum, won't incorporate into the glass. But in the lab, Shortland and colleagues reproduced a chemical reaction that Late Bronze Age craftspeople may have used to create a compatible pigment. And they created a deep blue glass that did, in fact, resemble Egyptian blue glass.

In the first years of this century, a relatively new method offered more insights. Called laser ablation inductively coupled mass spectrometry, or LA-ICP-MS, the technique uses a laser to remove a tiny speck of material, invisible to the naked eye. (“That's very much more acceptable to a museum than getting the big hammer out and taking a piece off,” Shortland says.) It then uses mass spectrometry to measure a suite of elements, creating a chemical fingerprint of the sample.

Based on this method, in 2009 Shortland, Walton and others analyzed Late Bronze Age glass beads unearthed in Greece, which some researchers proposed had its own glass production workshops. The analysis revealed that the Grecian glass had either Near

Eastern or Egyptian signatures, supporting the idea that Greece imported glass from both places and, though it may have worked the glass, did not make it locally. Egyptian glasses tended to have higher levels of lanthanum, zirconium and titanium, while Near Eastern glasses tended to have more chromium.

Obscure origins

But where was glass first birthed? For at least 100 years, researchers have debated over two main contenders: the Near East and Egypt. Based on some beautiful, well-preserved glass artifacts dating from around 1500 BCE, Egypt was favored at first. But by the 1980s, researchers were placing their bets on the Near East after excavators found loads of glass at Nuzi, a Late Bronze Age provincial town in modern-day Iraq, thought to date from the 1500s BCE.

Around that same time, though, a reanalysis of archaeological texts revealed that Nuzi was 100 to 150 years younger than estimated, and the Egyptian glass industry from that time period seems to have been more advanced — favoring Egypt once again.

But that isn't the end of the story. Glass can degrade, especially in wet conditions. Objects from Egypt's ancient tombs and towns have lasted millennia, aided by the desert's nearly ideal preservation environment. Near Eastern glass, on the other hand, from tombs on Mesopotamian floodplains, more frequently faced attacks by water, which can leach out stabilizing compounds and turn glass to flaky powder.

This deteriorated glass is difficult to identify and impossible to display, meaning lots of Near East glass may be missed. "I think a lot of the glass has effectively disappeared," Shortland says. "Early excavations were less bothered about this flaky ex-glass than they might have been about other things."

The bottom line: "You can't really decide which is the earliest at the moment," Shortland says.

Finding glassmaking

It's even tricky to parse where glass was made at all. That's partly because the material was frequently exchanged, both as finished objects and as raw glass to be worked into beads or vessels.

Glass helped to tie ancient empires together, says Thilo Rehren, an archaeological materials scientist at the Cyprus Institute in Nicosia who has examined the craftsmanship behind objects from Tut's tomb, among others. Kings shipped materials to other rulers, expecting goods or loyalty in return, he says. Ancient inventories from the Late Bronze Age reveal an exchange of ivory, gems, wood, animals, people and more, and while the role of glass in this convention of gifting and tribute isn't fully understood, the composition of artifacts supports glass swaps too.

In a glass bead necklace excavated in Gurob, Egypt, in an area thought to once have been a harem palace, Shortland and colleagues found the chemical signature associated with Mesopotamia: relatively high levels of chromium. The beads' location implied that the bling was probably gifted to Pharaoh Thutmose III along with Near Eastern women who

became the king's wives. With chemistry on the case, "we're now just beginning to see some of this exchange going on between Egypt and other areas," Shortland says.

In the early 1980s, divers found the mother lode of such exchanges off the coast of Turkey in a sunken vessel from the 1300s BCE called the Uluburun shipwreck. Analysis of its contents reveals a global economy, says Caroline Jackson, an archaeologist at the University of Sheffield in England. Possibly a Phoenician ship on a gift-giving expedition, the vessel was hauling items from all over: ivory, copper, tin, even amber from the Baltic. From the wreck, excavators retrieved a load of colored glass — 175 unfinished blocks, called ingots, for glassworking.

Most of the ingots were cobalt-colored deep blue, but the ship was also ferrying purple and turquoise ingots. Jackson and her colleagues chipped a few small fragments off of three ingots and reported in 2010 that the raw glass blocks were Egyptian in origin, based on the concentration of trace metals.

Tracing glassmaking

Another reason why it's tricky to identify sites for glassmaking is that the process makes little waste. "You get a finished object, and that, of course, goes into the museum," Rehren says. That led him and archaeologist Edgar Pusch, working in a flea-ridden dig house on the Nile Delta about 20 years ago, to ponder pottery pieces for signs of an ancient glassmaking studio. The site, near present day Qantir, Egypt, was the capital of Pharaoh Ramses II in the 1200s BCE.

Rehren and Pusch saw that many of the vessels had a lime-rich layer, which would have acted as a nonstick barrier between glass and the ceramic, allowing glass to be lifted out easily. Some of these suspected glassmaking vessels — including a reused beer jar — contained white, foamy-looking semi-finished glass. Rehren and Pusch also linked the color of the pottery vessels to the temperature they'd withstood in the furnace. At around 900 degrees Celsius, the raw materials could have been melted, to make that semi-finished glass.

But some crucibles were dark red or black, suggesting they'd been heated to at least 1,000 degrees Celsius, a high enough temperature to finish melting the glass and color it evenly to produce a glass ingot.

Some crucibles even contained lingering bits of red glass, colored with copper. "We were able to identify the evidence for glassmaking," Rehren says. "Nobody knew what it should have looked like."

Since then, Rehren and colleagues have found similar evidence of glassmaking and ingot production at other sites, including the ancient desert city of Tell el-Amarna, known as Amarna for short, briefly the capital of Akhenaton during the 1300s BCE. And they noticed an interesting pattern. In Amarna's crucibles, only cobalt blue glass fragments showed up. But at Qantir, where red-imparting copper was also worked to make bronze, excavated crucibles contain predominantly red glass fragments. ("Those people knew exactly how to deal with copper — that was their special skill," Rehren says.) At Qantir, Egyptian Egyptologist Mahmoud Hamza even unearthed a large corroded red glass ingot

in the 1920s. And at a site called Lisht, crucibles with glass remains contain primarily turquoise-colored fragments.

The monochrome finds at each site suggest that workshops specialized in one color, Rehren says. But artisans apparently had access to a rainbow. At Amarna, glass rods excavated from the site — probably made from re-melted ingots — come in a variety of colors, supporting the idea that colored ingots were shipped and traded for glassworking at many locations.

Glass on the ground

Archaeologists continue to pursue the story of glass at Amarna — and, in some cases, to more carefully repeat the explorations of earlier archaeologists.

In 1921-22, a British team led by archaeologist Leonard Woolley (most famous for his excavations at Ur) excavated Amarna. “Let’s put it bluntly — he made a total mess,” says Anna Hodgkinson, an Egyptologist and archaeologist at the Free University of Berlin. In a hurry and focused on more showy finds, Woolley didn’t do due diligence in documenting the glass. Excavating in 2014 and 2017, Hodgkinson and colleagues worked to pick up the missed pieces.

Hodgkinson’s team found glass rods and chips all over the area of Amarna they excavated. Some were unearthed near relatively low-status households without kilns, a headsatcher because of the assumed role of glass in signifying status. Inspired by even older Egyptian art that depicted two metalworkers blowing into a fire with pipes, the archaeologists wondered whether small fires could be used to work glass. Sweating and getting stinky around the flames, they discovered they could reach high enough temperatures to form beads in smaller fires than those typically associated with glasswork. Such tiny fireplaces may have been missed by earlier excavators, Hodgkinson says, so perhaps glassworking was less exclusive than researchers have always thought. Maybe women and children were also involved, Hodgkinson speculates, reflecting on the many hands required to maintain the fire.

Art from a tomb (top) shows metal workers using blowpipes to ventilate a small fire during an era that pre-dates Amarna. In an archaeological experiment (bottom), researchers tested whether it was possible to make glass beads like those found at Amarna in a similar manner, blowing into the fire using pipes. Anna K. Hodgkinson (top) / Andreas Mesli (bottom)

Rehren, too, has been rethinking whom glass was for, since Near Eastern merchant towns had so much of it and large amounts were shipped to Greece. “It doesn’t smell to me like a closely controlled royal commodity,” he says. “I’m convinced that we will, in 5, 10 years, be able to argue that glass was an expensive and specialist commodity, but not a tightly controlled one.” Elite, but not just for royalty.

Researchers are also starting to use materials science to track down a potential trade in colors. In 2020, Shortland and colleagues reported using isotopes — versions of elements that differ in their atomic weights — to trace the source of antimony, an element that can be used to create a yellow color or that can make glass opaque. “The vast majority of the very early glass — that’s the beginning of glassmaking — has antimony in it,” Shortland

says. But antimony is quite rare, leading Shortland's team to wonder where ancient glassmakers got it from.

The antimony isotopes in the glass, they found, matched ores containing antimony sulfide, or stibnite, from present-day Georgia in the Caucasus — one of the best pieces of evidence for an international trade in colors.

Researchers are continuing to examine the era of first glass. While Egypt has gotten a large share of the attention, there are many sites in the Near East that archaeologists could still excavate in search of new leads. And with modern-day restrictions on moving objects to other countries or even off-site for analysis, Hodgkinson and other archaeologists are working to apply portable methods in the field and develop collaborations with local researchers. Meanwhile, many old objects may yield new clues as they are analyzed again with more powerful techniques.

As our historical knowledge about glass continues to be shaped, Rehren cautions against certainty in the conclusions. Though archaeologists, aided by records and what's known of cultural contexts, carefully infer the significance and saga of artifacts, only a fraction of a percent of the materials that once littered any given site even survives today. "You get conflicting information, conflicting ideas," he says. All these fragments of information, of glass, "you can assemble in different ways to make different pictures."

Please visit the site: <https://www.smithsonianmag.com/science-nature/a-brief-scientific-history-of-glass-180979117/> [Go there for pix and map]

JUSTINIANIC PLAGUE WAS NOTHING LIKE FLU AND MAY HAVE HIT ENGLAND BEFORE CONSTANTINOPLE

‘Plague sceptics’ are wrong to underestimate the devastating impact that bubonic plague had in the 6th–8th centuries CE, argues a new study based on ancient texts and recent genetic discoveries. The same study suggests that bubonic plague may have reached England before its first recorded case in the Mediterranean via a currently unknown route, possibly involving the Baltic and Scandinavia.

We have a lot to learn from how our forebears responded to epidemic disease Peter Sarris

The Justinianic Plague is the first known outbreak of bubonic plague in west Eurasian history and struck the Mediterranean world at a pivotal moment in its historical development, when the Emperor Justinian was trying to restore Roman imperial power.

For decades, historians have argued about the lethality of the disease; its social and economic impact; and the routes by which it spread. In 2019-20, several studies, widely publicised in the media, argued that historians had massively exaggerated the impact of the Justinianic Plague and described it as an ‘inconsequential pandemic’.

In a subsequent piece of journalism, written just before COVID-19 took hold in the West, two researchers suggested that the Justinianic Plague was ‘not unlike our flu outbreaks’.

In a new study, published in *Past & Present*, Cambridge historian Professor Peter Sarris argues that these studies ignored or downplayed new genetic findings, offered misleading statistical analysis and misrepresented the evidence provided by ancient texts.

Sarris says: “Some historians remain deeply hostile to regarding external factors such as disease as having a major impact on the development of human society, and ‘plague scepticism’ has had a lot of attention in recent years.”

Sarris, a Fellow of Trinity College, is critical of the way that some studies have used search engines to calculate that only a small percentage of ancient literature discusses the plague and then crudely argue that this proves the disease was considered insignificant at the time.

Sarris says: “Witnessing the plague first-hand obliged the contemporary historian Procopius to break away from his vast military narrative to write a harrowing account of the arrival of the plague in Constantinople that would leave a deep impression on subsequent generations of Byzantine readers. That is far more telling than the number of plague-related words he wrote. Different authors, writing different types of text, concentrated on different themes, and their works must be read accordingly.”

Sarris also refutes the suggestion that laws, coins and papyri provide little evidence that the plague had a significant impact on the early Byzantine state or society. He points to a major reduction in imperial law-making between the year 546, by which point the plague

had taken hold, and the end of Justinian's reign in 565. But he also argues that the flurry of significant legislation that was made between 542 and 545 reveals a series of crisis-driven measures issued in the face of plague-induced depopulation, and to limit the damage inflicted by the plague on landowning institutions.

In March 542, in a law that Justinian described as having been written amid the 'encircling presence of death', which had 'spread to every region', the emperor attempted to prop up the banking sector of the imperial economy.

In another law of 544, the emperor attempted to impose price and wage controls, as workers tried to take advantage of labour shortages.

Alluding to the plague, Justinian declared that the 'chastening which has been sent by God's goodness' should have made workers 'better people' but instead 'they have turned to avarice'.

That bubonic plague exacerbated the East Roman Empire's existing fiscal and administrative difficulties is also reflected in changes to coinage in this period, Sarris argues. A series of light-weight gold coins were issued, the first such reduction in the gold currency since its introduction in the 4th century and the weight of the heavy copper coinage of Constantinople was also reduced significantly around the same time as the emperor's emergency banking legislation.

Sarris says: "The significance of a historical pandemic should never be judged primarily on the basis of whether it leads to the 'collapse' of the societies concerned. Equally, the resilience of the East Roman state in the face of the plague does not signify that the challenge posed by the plague was not real."

"What is most striking about the governmental response to the Justinianic Plague in the Byzantine or Roman world is how rational and carefully targeted it was, despite the bewilderingly unfamiliar circumstances in which the authorities found themselves.

"We have a lot to learn from how our forebears responded to epidemic disease, and how pandemics impacted on social structures, the distribution of wealth, and modes of thought."

Bubonic plague in England

Until the early 2000s, the identification of the Justinianic Plague as 'bubonic' rested entirely upon ancient texts which described the appearance of buboes or swellings in the groins or armpits of victims.

But then rapid advances in genomics enabled archaeologists and genetic scientists to discover traces of the ancient DNA of *Yersinia pestis* in Early Medieval skeletal remains. Such finds have been made in Germany, Spain, France and England.

In 2018, a study of DNA preserved in remains found in an early Anglo-Saxon burial site known as Edix Hill in Cambridgeshire revealed that many of the interred had died carrying the disease. Further analysis revealed that the strain of *Y. pestis* found was the earliest identified lineage of the bacterium involved in the 6th-century pandemic.

Sarris says: “We have tended to start with the literary sources, which describe the plague arriving at Pelusium in Egypt before spreading out from there, and then fitted the archaeological and genetic evidence into a framework and narrative based on those sources. That approach will no longer do. The arrival of bubonic plague in the Mediterranean around 541 and its initial arrival in England possibly somewhat earlier may have been the result of two separate but related routes, occurring some time apart.”

The study suggests that the plague may have reached the Mediterranean via the Red Sea, and reached England perhaps via the Baltic and Scandinavia, and from there onto parts of the continent.

The study emphasises that despite being called the ‘Justinianic Plague’, it was “never a purely or even primarily Roman phenomenon” and as recent genetic discoveries have proven, it reached remote and rural sites such as Edix Hill, as well as heavily populated cities.

It is widely accepted that the lethal and virulent strain of bubonic plague from which the Justinianic Plague and later the Black Death would descend had emerged in Central Asia by the Bronze Age before evolving further there in antiquity.

Sarris suggests that it may be significant that the advent of both the Justinianic Plague and the Black Death were preceded by the expansion of nomadic empires across Eurasia: the Huns in the 4th and 5th centuries, and the Mongols in the 13th.

Sarris says: “Increasing genetic evidence will lead in directions we can scarcely yet anticipate, and historians need to be able to respond positively and imaginatively, rather than with a defensive shrug.”

P Sarris, ‘New Approaches to the ‘Plague of Justinian’, Past & Present (2021); DOI: 10.1093/pastj/gtab024.

Please visit the site: <https://www.cam.ac.uk/research/news/justinianic-plague-was-nothing-like-flu-and-may-have-hit-england-before-constantinople>
