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

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

Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

- Φεβρουάριος 2020 -

Time is the wisest of all things that are; for it brings everything to light. (*Thales*)

Newsletter of the Hellenic Society of Archaeometry

- February 2020 -

Nr. 227

ΠΙΝΑΚΑΣ ΠΕΡΙΕΧΟΜΕΝΩΝ – TABLE OF CONTENTS

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ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS

RADIOCARBON IN THE ENVIRONMENT III, 6-10/7/2020, GLIWICE, POLAND, SECOND CIRCULAR

This is the second circular to announce the **3rd International Radiocarbon in the Environment Conference** (RIE III-2020) to take place on **6 to 10 July, 2020, at the Silesian University of Technology, Gliwice (Poland)**.

Details about Conference, as well as registration form can be found at the website: https://c14env.polsl.pl/
Organising committee e-mail: c14env@polsl.pl
Find us on Facebook: https://fb.com/c14env/

Topics

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

- the atmosphere (carbon dioxide, methane and other gases, aerosols)
- terrestrial environment (tree rings, macrofossils, sediments, animals, etc.)
- freshwater and marine environment (including groundwater and karstic systems)
- past and recent climate studies (regional and global changes)
- anthropogenic (fossil and nuclear) pollutions
- bio-components.

Sessions for related studies, such as development in sample preparation and measurement technique, statistical tools for data processing etc. are also foreseen.
Additionally, separate session on stable isotopes will be organized by Jacek Pawlyta (Jacek.Pawlyta@polsl.pl).

Important dates	Date
Call for abstract	December 15, 2019
Abstract for grant deadline	February 29, 2020
Abstract deadline	March 31, 2020
Notification of Abstract Acceptance	April 30, 2020
Early registration deadline	January 31, 2020
Deadline for refund	May 01, 2020
Conference date	July 06-10, 2020

Abstract submission

For abstract submission, please register at the website https://c14env.polsl.pl/ first. Abstract submission form is available for registered participants.

Venue

The conference will be held in the city of Gliwice, in southern Poland. Gliwice is one of the oldest and most beautiful cities in the Upper Silesia. Gliwice is also an important academic, scientific and industrial centre. More information about the city can be found on the website https://gliwice.eu/en.

Our conference will be held in the *Education and Congress Centre* located on the campus of the Silesian University of Technology. Gala Dinner will also take place on campus.

Accommodation

Accommodation is not included in the conference fee. Delegates are responsible for finding and booking their own accommodation. There is no specific conference hotel, but we have some recommendations listed below:

- Qubus Hotel Gliwice (https://www.qubushotel.com/en)
- Hotel Silvia (http://hotelsilvia.pl/en/)
- Hotel Royal (https://www.hotelroyal.com.pl/en/hotel-2/)
- Hotel Diament Plaza Gliwice (https://www.hotelediament.pl/en/hotels/hotel-diament-plaza-gliwice/)
- Hotel Diament Economy (https://www.hotelediament.pl/en/hotels/hotel-diament-economy-gliwice/).

The choice of hotels is much greater. For example hotels can be booked through the websites like booking.com, momondo.com or airbnb.com.

Registration payment

Registration Fees	**early bird** (11.2019 - 01.2020)	**regular** (02.2020 - 04.2020)	**late** from 05.2020
Full delegate fee	460 EUR	480 EUR	550 EUR
Student delegate fee	270 EUR	270 EUR	350 EUR
Accompanying person fee*	250 EUR	250 EUR	250 EUR

*- includes ice breaker reception, conference tour and lunches

Participants, who are interested in **Gala Dinner**, may participate in it for an additional fee **50 EUR**.

Registration fee includes:
1. Conference registration, abstract volume
2. Ice breaker (accompanying person also)
3. Lunches (accompanying person also)
4. Coffee breaks
5. Publication
6. Congress bag and materials
7. Conference tour (accompanying person also)

Cancellation policy:
75% refund before 01.04.2020
50% refund before 01.05.2020
No refund after 01.05.2020
The payment of the conference fee should be done via bank transfer:
Account information for payments in EUR:

PL68 1050 1230 1000 0023 6055 5748 (**ING BANK ŚLĄSKI S.A. O/GLIWICE)** SWIFT CODE: INGBPLPW
Remark: C14env and the name of the participant.
Please ensure that the bank charges are borne by the participant, and make sure that the remark C14env and your name appear on the payment form. Regrettably, we cannot accept credit cards or payment by cash.

Call for Grants for young researchers and doctoral students

3rd International Radiocarbon in the Environment Conference with the support of **Ministry of Science and Educatio**n (534/P-DUN/2019) offers **10 grants** to early career researchers (young researchers with experience < 4 years and doctoral students) to take part in the Conference **(**RIE III - 2020**)**. The grants will cover:

- the conference registration fee,
- accommodation and
- refund of travel costs (up to 200 EURO) of the grant winners.

The submission and acceptance of an abstract and the active participation in the conference (preferably oral presentation) are mandatory to receive this support. Applicants are requested to submit the following documents **by 29 FEBRUARY 2020**:

- Abstract submitted to the conference
- Motivation letter
- Short CV.

In order to take part in the program, please register at the conference website (https://c14env.polsl.pl/) and submit abstract for grant with necessary documents using appropriate form on the website.

We look forward to welcoming you in Gliwice, Poland!

*Information about the General Data Protection Regulation due to EU law can be found on the conference website.

CL – CLIMATE: PAST, PRESENT, FUTURE, 3–8 MAY 2020, VIENNA, AUSTRIA

Dear Colleagues,

As Georges Denton once said: ’Time is everything’

You are welcome to join this session dedicated to problems of geochronometers:
CL5.1 Geochronological tools for environmental reconstructions, Co-organized by GM2/SSS3

https://meetingorganizer.copernicus.org/EGU2020/sessionprogramme/CL#CL5

Best wishes, Irka

****

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C14 analysis http://www.ams.ethz.ch/LIPServices/c14.html
&
http://www.ams.ethz.ch/LIPServices/radiocarbon-dating-and-protection-of-cultural-heritage.html

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EAA 2020, 26-30 AUGUST, 2020, BUDAPEST

Dear colleagues,

We hereby invite you to submit your abstract to one of our archaeometallurgy sessions at the upcoming EAA 2020 in Budapest:

- #345: Cross-disciplinary approaches in archaeometallurgy: Part 1
  with presentations of 6 slides in 6 minutes
- #361: Cross-disciplinary approaches in archaeometallurgy: Part 2
  with regular presentations with more time devoted to discussion

This year we focus on networking among researchers or in other words: cross-disciplinary archaeometallurgical studies. Please don't feel confined by any temporal or regional limit: from copper age to recent finds, from all over the world: as long as it concerns ancient metals and cross-disciplinary ways to study them, you are welcome! Contributions along the entire artefact biography are considered suitable: from raw materials to conservation.

The abstracts can be found below, as well as on:
www.e-a-a.org/eaa2020/scientificprogramme.

The call for contributions ends at **13 February 2020**, so please submit in time and we hope to see you in Budapest from 26-30 August. For further questions, don't hesitate to contact one of us.

Thanks in advance!

Kind regards,

Ragnar Saage,
Michael Neiß,
Arne Jouttijärvi,
Sebastian Wärmlander,
Janneke van der Stok

****

Archaeometallurgy is a multidisciplinary field populated by researchers of varying backgrounds. Some researchers have their background in science or engineering, and focus on scientific analysis of metallurgical samples. Others prefer an experimental approach, trying to reconstruct ancient techniques and technologies through practical work. And some have their background in the humanities or social sciences, trying to understand metal objects and metal-working from a theoretical or cultural history point of view, or fit them into historical narratives. While all these approaches are valuable in themselves, the most useful archaeometallurgical research is often obtained when two or more approaches are combined. This typically requires different specialists to meet and collaborate – i.e. networking among researchers.

specific for session #345:

In this 6-slides-6-minutes session we welcome case studies on ancient metalworking in a broad sense. We particularly welcome papers that provide examples of cross-disciplinary research, or show how novel methods – analytical or theoretical – can be used in archaeometallurgical studies. Furthermore, we encourage young researchers to present their work.

specific for session #361:
In this discussion session we welcome papers on ancient metalworking in a broad sense concerning the temporal and spatial frameworks, yet with focus on methodologies to cross-disciplinary archaeometallurgical research. We particularly welcome papers that can stimulate discussions on how the same research material can be studied from different angles. One can think of ways to make analytical techniques more accessible and comprehensible to non-engineers or how to integrate social perspectives when investigating ancient metalworking.

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Metals Inc. - onderzoek in archeologie en kunst
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THE 13TH MEETING OF THE CHALCOLITHIC FORUM GHASSULIAN METALLURGY IN CONTEXT, 12 MARCH, 2020, INSTITUTE OF ARCHAEOLOGY, THE HEBREW UNIVERSITY OF JERUSALEM, MT. SCOPUS, ROOM 302

Gathering (8:30-9:00)

Greetings and opening remarks (9:00-9:15)
Dina Shalem – the Chalcolithic Forum
Yossi Garfinkel – Head, Institute of Archaeology, the Hebrew University
Uri Davidovich and Erez Ben-Yosef – co-organizers of the 13th meeting

First Session: Sources, Technology and Chaîne opératoire (9:15-10:45)
Chair: Yossi Garfinkel (The Hebrew University)

Erez Ben-Yosef (Tel Aviv University), Craig Smitheram (Tel Aviv University), Galina Faershtein (Geological Survey of Israel) and Naomi Porat (Geological Survey of Israel): New Evidence for 5th Millennium BCE Mining Activities in Timna Valley

Naama Yahalom-Mack and Yigal Erel (The Hebrew University): A New Perspective on the Origin of Chalcolithic Copper Alloys

Dana Ackerfeld (Tel Aviv University), Yael Abadi-Reiss (Israel Antiquities Authority), Talia Abulafia (Israel Antiquities Authority), Dimitry Yegorov (Israel Antiquities Authority) and Erez Ben-Yosef (Tel Aviv University): A Furnace or a Crucible? A Newly Discovered Metallurgical Workshop at Horvat Beter

Thomas Rose (Ben-Gurion University), Nurith Goshen (Israel Museum) and Yuval Goren (Ben-Gurion University): Ghassulian or not Ghassulian? Analysis of two unusual mace head assemblages from the collections of the Israel Museum

Coffee Break (10:45-11:10)

Second Session (11:10-12:30): Presentation of Recently-uncovered Metallurgical Assemblages
Chair: Naama Scheftelowitz (Tel Aviv University)

Dina Shalem (Israel Antiquities Authority): En Esur

Eli Buchman, Danny Rosenberg, Sariel Shalev and Shai Bar (University of Haifa): Fazael Sites

Yotam Asscher (Israel Antiquities Authority), Yael Abadi-Reiss (Israel Antiquities

Authority), Daniel Varga (Israel Antiquities Authority), Yuval Goren (Ben-Gurion University), Thomas Rose (Ben-Gurion University), Elisabetta Boaretto (Weizmann Institute), Getta Rosenzweig (Weizmann Institute), Sariel Shalev (University of Haifa) and Gilberto Artioli (University of Padova): Ashkelon, Agamim-East

Ron Beeri (Israel Antiquities Authority), Yitzhak Vassal (Tel Aviv University) and Erez Ben-Yosef (Tel Aviv University): Beth Shemesh

Micka Ullman and Uri Davidovich (The Hebrew University): Complex Caves in the Central Highlands

Lunch (12:30-13:30)

Third Session (13:30-15:00): Contexts and Connections
Chair: Shay Bar (University of Haifa)

Uri Davidovich (The Hebrew University), Naomi Porat (Geological Survey of Israel) and Yehudit Harlavan (Geological Survey of Israel): Technologies Intertwined – Copper and Enstatite

Getta Rosenzweig and Elisabetta Boaretto (Weizmann Institute): The Ghassulian Radiocarbon Chronology and its Implications on the Metallurgical History of the Southern Levant

Milena Gošić (University of Belgrade) and Isaac Gilead (Ben-Gurion University): Ghassulian Metallurgy: Spatial and Chronological Aspects

Steve Rosen (Ben-Gurion University): From the Desert to the Sown and Back Again: The Cultural Contexts of Early Copper Exchange

Discussion (15:00-16:00): Present and Future of Chalcolithic Metallurgy Research Chair: Ianir Milevski (Israel Antiquities Authority)

Discussants:
Miki Sebanne (Israel Antiquities Authority)
Sariel Shalev (University of Haifa)

Concluding remarks and selection of theme for the 14th meeting, 2021

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Prof. Erez Ben-Yosef, Ph.D.
The J. M. Alkow Department of Archaeology and ANE Cultures
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Visiting Professor, Department of Anthropology, UCSD
Head, Timna Expedition

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web: https://en-humanities.tau.ac.il/profile/ebenyose
The Central Timna Valley (CTV) Project: http://archaeology.tau.ac.il/ben-yosef/CTV/

"We cannot solve our problems with the same thinking we used when we created them."
(A. Einstein)

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CALL FOR PAPERS: EXPERIMENTAL AND EXPERIENTIAL ARCHAEOLOGY (ASOR 2020), ASOR 2020 ANNUAL MEETING, BOSTON, MA AT THE WESTIN BOSTON WATERFRONT, NOV. 18-21, 2020

SESSION DESCRIPTION Chair: Tracy L. Spurrier (University of Toronto)

This session will feature recent research involving experimental and experiential archaeology projects. This type of work allows archaeologists to put themselves into the past to better understand the production processes of everyday life activities, and to attempt to access ancient human existence, albeit through the lens of our modern perspectives.

Experimental and experiential archaeology projects test archaeological interpretations of ancient manufacture by reconstructing objects and recreating their production methods. Through the experiments, one can try to identify the intentions and goals involved in ancient production and to understand the limitations and challenges that may have been present throughout these processes. This includes, but is not limited to, craft production, food preparation, building construction, tool making, technological innovations, and much more.

The act itself of conducting an experiment replicating past procedures, as opposed to simply studying them, allows for greater insight into the complexity of the overall process as well as personally experiencing the physicality of a task and other related sensations.

The outcomes of experimental and experiential archaeology projects are invaluable for many reasons: testing hypotheses about ancient manufacture, use as pedagogical tools for education purposes, for creating accurate living history museums, and in simulation models and exercises.

To submit an abstract of 250 words or less, please use ASOR's Online Abstract Submission Site, the deadline is February 15, 2020: http://www.asor.org/am/2020-call-for-papers

Note: ASOR membership and registration are required for participation and must be current at the time of abstract submission.

For any questions, please contact Tracy L. Spurrier (tlspurrier@gmail.com)

Please visit the site: http://www.asor.org/am/

CALL FOR PAPERS: : MATERIALS AS A BODILY AND SYMBOLIC COMPONENT OF SOUND OBJECTS", 26TH ANNUAL MEETING OF THE EUROPEAN ASSOCIATION OF ARCHAEOLOGISTS (EAA), BUDAPEST, HUNGARY, 26–30 AUGUST 2020

You are cordially invited to present your research in the session "Materializing Sound in Antiquity: Materials as a bodily and symbolic component of sound objects" in the 26th Annual Meeting of the European Association of Archaeologists (EAA) in Budapest, Hungary, 26–30 August 2020.

Please submit your paper abstract (150–300 words) by 13 February 2020 via the EAA website: https://submissions.e-a-a.org/eaa2020/. General information about the conference, venue, fees and detailed guidelines can be found on: https://www.e-a-a.org/eaa2020.

Please forward this invitation to anyone you think may be interested.
If you have any questions, please email the session organizers: Daniel Sánchez (emperadoroldemburguen@gmail.com ; danielsanmu@ugr.es) and Arnaud Saura-Ziegelmeyer (a.sauraziegelmeyer@gmail.com)

Session #146: Materializing Sound in Antiquity: Materials as a bodily and symbolic component of sound objects

Abstract:
Materials used to make musical instruments or sound objects are essential in archaeomusicological studies. They allow us to assess the acoustic capacities of artefacts and to reconstruct the soundscapes of Antiquity. Bronze (and more generally metals), but also wood or terracotta have their own logic, and they raise a set of questions (conservation, restoration, lifespan, sound range).

Beyond their inherent acoustic properties, materials can also be addressed as components and indicators of practical and symbolic functions. Different issues can be tackled in this perspective: does a change in material induce a change in function? Can the use of a sound object be reduced to the material that composes it? Do materials have an influence on the place and the perception of the sound objects into the ancient Soundscape? Is the classification of archaeological finds through materials relevant and accurate?

This last question is especially relevant. Indeed, various classifications of instruments in Antiquity coexist. Presently, the classifications according to the materials are particularly challenging. This is the case, among others, of the Mesopotamian and Chinese classification of instruments.

From our knowledge, there is no dedicated contribution in archaeomusicology about materials as a bodily and symbolic component of sound objects. This workshop will provide an innovative contribution for future archaeomusicological research. Scholars from various fields (archaeology, ancient history, philology, etc.) are welcome to apply to this session. Submitted papers may focus on materials or sonorous objects, as well as on methodological (approaches, typology, organology, etc.) or historiographical questions raised by the theme. We accept papers from any field and culture included in the Antiquity (3rd millennium BCE - 6th century CE, Africa, Asia and Europe). The outcomes and discussions of this session will be published.

We also want to organize a brief concert in order to explore in a practical way the role of materials in the configuration of ancient instruments and sound objects. People presenting papers can join this event.

Keywords: Archaeomusicology, Soundscape archaeology, Organology, Materials, Musical Instruments, Sound Objects Affiliated with the AMIG (Archaeomusicology Interest Group) and the ISGMA (International Study Group on Music Archaeology)

Submissions can only be done online.

2020 VISION: CURRENT AND FUTURE RESEARCH IN CULTURAL HERITAGE PRESERVATION SYMPOSIUM, OCTOBER 14 & 15, 2020 – IMAGE PERMANENCE INSTITUTE, ROCHESTER INSTITUTE OF TECHNOLOGY - ROCHESTER, NY, CALL FOR PRESENTATIONS

The Image Permanence Institute is seeking presentation abstracts for a two-day symposium, October 14-15 2020, hosted at Rochester Institute of Technology. Symposium content will focus on sharing current and future preservation research initiatives and projects. Presentations should address the development and implementation of new preservation tools, methodologies, and research approaches, as well as practical resources, and training opportunities for the preservation community. Research areas may include, but are not limited to, image stability and the preservation of photographic materials, materials testing and standards work, sustainable environmental management in collections spaces, and innovations in preventive conservation.

Presentations will be 20 minutes in length, and the deadline for abstract submission is **February 7, 2020**. Submit an abstract online at:
https://imagepermanenceinstitute.wufoo.com/forms/xpbxdwr193h0tb/

In addition to the symposium, related workshops will be scheduled before and after the symposium days. A full schedule of events and registration will be available in April 2020.

Learn more about the Image Permanence Institute at:
www.imagepermanenceinstitute.org

Please contact Jae Gutierrez, Executive Director of IPI, if you have any questions about the symposium: jjgpph@rit.edu

**********J

Jennifer Jae Gutierrez
Executive Director, Image Permanence Institute
Rochester Institute of Technology
70 Lomb Memorial Drive, GAN-2000
Rochester, NY 14623-5604
www.imagepermanenceinstitute.org

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CALL FOR PAPERS, AMERICAN SCHOOLS OF ORIENTAL RESEARCH (ASOR) ANNUAL MEETING, ISOTOPIC INVESTIGATIONS IN THE ANCIENT NEAR EAST AND CAUCASUS SESSION BOSTON, NOV. 18-21, 2020

Isotopic Investigations in the Ancient Near East and Caucasus session:
http://www.asor.org/am/list-of-approved-sessions-2020/#isotopic

Session Chairs: G. Bike Yazıcıoğlu-Santamaria, Simon Fraser University and Maureen E. Marshall, University of Illinois at Urbana-Champaign

Description: The objective of this session is to encourage a dialogue among researchers conducting biogeochemical analyses in the region, integrating analytical methods with social and historical questions in ancient communities of the ancient Near East and Caucasus across the periods. Current developments are discussed each year at the Archaeological Isotopes Working Group business meeting.

The deadline for submission of abstracts (max. 250 words) is February 15, 2020. Submission is through ASOR's Online Abstract Management System: https://app.oxfordabstracts.com/login?redirect=/stages/1591/submissions/new

Please, be sure to select "Isotopic Investigations in the Ancient Near East and Caucasus" session from the drop-down list.

Note that membership in ASOR and registration for the Annual Meeting are required at the time of abstract submission. Registration is at:
http://www.asor.org/am/2020-registration/

Please contact Bike Yazicioglu (gbikeyaz@gmail.com) with any questions.

Please visit the site: http://www.asor.org/am/

TRULY INTERDISCIPLINARY SCIENCE! CERAMIC, METAL, GLASS, AND STONE PROVENANCING STUDIES AS TOOLS TO UNDERSTAND THE ARCHAEOLOGY OF TRADE AND EXCHANGE (#211), 26TH ANNUAL MEETING OF THE EUROPEAN ASSOCIATION OF ARCHAEOLOGISTS (EAA), BUDAPEST, HUNGARY, 26–30 AUGUST 2020

Dear colleagues,

please feel also invited to submit your abstract to this session at the upcoming annual meeting of the EAA in Budapest – deadline is 13th February 2020 https://www.e-a-a.org/EAA2020/Programme.aspx?WebsiteKey=4245c0d1-9c0e-4a58-bfa2-906885ad5f28&hkey=e2646dc0-ed23-404c-ad20-24129c9e69c3&Program=3#Program:

Truly interdisciplinary science! Ceramic, metal, glass, and stone provenancing studies as tools to understand the archaeology of trade and exchange (#211)

Content:

This session will consider the contribution that interdisciplinary Heritage Science applications (e.g. preferably non-invasive X-ray, electron, ion beam, and neutron methods), are making to archaeological narratives of production, trade, and exchange of goods. We welcome studies that seek to characterise material resources such as ore deposits, and to define the geographical provenance of raw materials, and of excavated artefacts.

There are huge databases, collected from the 1960s onward, of neutron activation analyses and X-ray fluorescence and other elemental spectroscopic analyses of metal artefacts (Bronze Age European material in particular), archaeological ceramics, glass, stone, and obsidian. In the past twenty years, databases have been built up of isotopic analyses, in particular lead isotope analysis, of metal ores and artefacts, and glass as well. How far have these large data-sets been used to broaden our understanding of the processes and motivations of early production, trade and exchange?

In this session, we would like to highlight the importance of scientific studies in archaeology to add new information and to develop new narratives. We also invite presentations on insights that provenance studies provide into understanding technological changes in any past society world-wide, and on understanding of material culture through social-economic relationships.

We invite contributions that address issues, theories, new analytical methods, and applications relating to scientific provenancing of archaeological materials.
* Which method or combination of methods works best for which material and/or archaeological period? And what are the limitations for particular methods applied to various materials?
* Are databases readily accessible and comparable, and are researchers successfully provenancing artefacts?
* How are archaeologists integrating new scientific methods and data into their interpretations and narratives?
* Are innovative methods leading to new insights that challenge existing paradigms in archaeology?
* How can researchers access Heritage Science research infrastructures, especially at large-scale facilities?

Please submit your abstracts via the conference portal **by 13th February**.

Best regards,

Evelyne Godfrey, Ineke Joosten, Heide Nørgaard, Zsolt Kasztovszky

With kind regards,

Heide Wrobel Nørgaard. Ph.D.

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RE-WEAVING THE NET: TRACING CONNECTIONS IN TRANS-CULTURAL RESOURCE-ECONOMICS (#324), 26TH ANNUAL MEETING OF THE EUROPEAN ASSOCIATION OF ARCHAEOLOGISTS (EAA), BUDAPEST, HUNGARY, 26–30 AUGUST 2020

Dear colleagues,

Please feel also invited to submit your abstract to this session at the upcoming annual meeting of the EAA in Budapest:

Re-Weaving the Net: Tracing connections in trans-cultural Resource-Economics (#324)

Resources like colourful stones and pigments, ivory, shells, amber, ores and metals have always fascinated humankind. Over time, different resources played an important role, not only in everyday life, but also in intra- and intercultural communications and as ritualistic offerings to supernatural powers. Accordingly, the appropriation of raw materials can be considered as one of the important driving forces in the development of or intensification of contacts on several different levels: both on an inter- and intracultural or even on an intra-community bases.

These contacts served as gateways for the exchange of said resources, but also for interchange of ideas and technologies, and as supply routes to maintain established production ensembles, thus forming complex and multi-layered networks. Differences and changes in the involvement and participation of these networks resulted in social inequalities, setting individuals or groups apart and transforming pre-existing networks. In this session, we welcome contributions (methodological papers as well as case studies) which focus on networks in the frame of resource appropriation on all scales in prehistoric and ancient times. How can we trace the emergence, development and decline of such networks and how can we evaluate them quantitatively and qualitatively? How can we trace down the changes induced by the access to or exclusion from resources and technologies in contact networks? How did communities react to changes in the availability of resources and technologies induced by other groups or within themselves? (How) can we pinpoint the individual agents within these networks?

As for the other sessions, please submit your abstracts via the conference portal **by 13th February**: http://www.e-a-a.org/eaa2020/scientificprogramme

Best regards,

Thomas Rose, Leandra Reitmaier-Naef, Peter Thomas, Erica Hanning

****

Thomas Rose, MSc
MSCA-ITN ED-ARCHMAT ESR 5
Ben-Gurion University of the Negev
Department of Bible, Archaeology and Ancient Near East

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CALL FOR PAPERS, AMERICAN SCHOOLS OF ORIENTAL RESEARCH (ASOR) ANNUAL MEETING, BOSTON, NOV. 18-21, 2020

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http://www.asor.org/am/2020-registration/

Please contact Bike Yazicioglu (gbikeyaz@gmail.com) with any questions.

Please visit the site: http://www.asor.org/am/

CALL FOR PAPERS: MATERIALS AS COLLABORATORS IN THE PRODUCTION OF OBJECTS, SESSION TO BE HELD AT THE THEORETICAL ARCHAEOLOGY GROUP (TAG) 2020 MEETING, STANFORD UNIVERSITY, 1-3 MAY 2020

Paper proposals must be submitted no later than 15 March through the TAG website: https://archaeology.stanford.edu/tag-2020/sessions-and-papers

Session Organizer: Anastasia Amrhein - University of Pennsylvania

15 minute papers

In recent years, following the emergence of the meta-field of New Materialism, some scholars (such as Nicole Boivin and Bjørnar Olsen, for example) have argued that objects, and thus materials, are agentive in their own right—that is, without the ascription of agency by humans. The philosophical endpoint of such considerations seems to be a decentralized understanding of agency (as proposed, for example, by Tim Ingold and Lambros Malafouris)—as something that emerges in the interaction of entities, rather than a property inherent to humans or non-humans.

However, conceiving of agency as a dense network or meshwork of relations without clear boundaries between entities, ultimately avoids answering difficult questions and exploring further the non-human components of the material world. After all, in practice, materials are experienced as discrete and other from our own bodies. Moreover, few studies have sought to recover how the agency of materials might have actually operated and been experienced in various contexts.

Thus, this session seeks to explore questions such as: How do we recover material agencies from the archaeological record? How can we distinguish between human and material agencies involved in object production processes? How and what do materials contribute to the formation of objects (and the archaeological record more broadly)?
More fundamentally, is the aim of archaeology to recover solely aspects of the social and anthropomorphic, or is it possible and useful to pursue non-anthropomorphic points of view and histories as well?

This session especially invites contributions from scholars working at the intersection of archaeology and anthropology, art history, or art practice, integrating theoretical and practical considerations.

THEORIES AND METHODS IN ARCHAEOLOGY: INTERACTIONS BETWEEN DISCIPLINES (#444), 26TH ANNUAL MEETING OF THE EUROPEAN ASSOCIATION OF ARCHAEOLOGISTS (EAA), BUDAPEST, HUNGARY, 26–30 AUGUST 2020

Dear colleagues,

The European Association of Archaeology will hold its annual meeting in Budapest, August 26-30, 2020. Budapest is one of the most beautiful cities in East-Central Europe, and to quote from the EAA website, the motto of the 2020 Annual Meeting in Budapest is "Networking!". Budapest has always been a continuous interface between different networks and networking systems in the past. This is where the cultures of East and West, North and South met in the past and it is where they still meet. This is an excellent opportunity to reach out to the archaeological community on applications and new developments in radiocarbon.

We invite submissions to a session on radiocarbon dating and archaeology, which is session 444, as noted below. The link to the conference website is given here: https://www.e-a-a.org/eaa2020/

The abstract deadline is 13 February 2020.

Session: #444

Theme & Session Format

Theme:
5. Theories and methods in archaeology: interactions between disciplines

Session format:
Regular session

Title & Content

Title:
14C : The clock reading the past and present of the humankind

Content:
The introduction of radiocarbon dating method in the second half the 20th Century revolutionized archeology. Ever since the first absolute radiocarbon ages were created for archeological contexts, the method remains a commonly used tool applied by archeologists. The technical developments that took place during the last seven decades

opened the field to new materials and new applications. Moreover, the technical and methodological improvements also showed the complexity of radiocarbon dating. We also address the many recent technical improvements to the methods, including reduction in sample sizes, automation and the wider availability of smaller devices. These changes have made it easier to date very small samples, including specific compounds, but at the same time, raise new questions about association of material with the events of interest. We invite archaeologists with questions about these methods, as well as experts to contribute. In this session we would like to address the many diverse aspects of radiocarbon dating applied to archeological samples such as removal of contamination, samples size and new developments in the calibration of the radiocarbon time-scale.

Keywords:
Radiocarbon dating, Radiocarbon calibration, AMS dating

Organisers
Main organiser:
Timothy Jull (Hungary, USA) [1,2]

Co-organisers:
Irka Hajdas (Switzerland) [3]
Mihaly Molnar (Hungary) [1]

Affiliations:
1. Institute for Nuclear Research
2. University of Arizona
3. ETH Zurich

We look forward to seeing you at EAA-2020.

Timothy Jull
Irka Hajdas
Mihaly Molnar

ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS

SUMMER SCHOOL - ADVANCED ELECTRON MICROSCOPY IN CULTURAL HERITAGE, E-CULT, 13 – 19 JULY 2020, KALAMATA, GREECE

Take a micro-look at antiquity!

The 2020 Summer School **'Advanced Electron Microscopy in Cultural Heritage – e-CULT'** will be organized by the Laboratory of Archaeometry of the University of the Peloponnese in collaboration with Art E Solutions, in Kalamata, Greece in 13-19 July 2020.

'e-Cult' Summer School aims at providing a solid theoretical and practical background in the application of Electron Microscopy (SEM and TEM) in Cultural Heritage studies. The participants will be able to gain extensive hands-on experience on study of various archaeological materials by SEM and TEM. The lectures and the lab tutorials will be highly renowned scientists form the fields of Electron Microscopy (Dr. G. Patriarche, Dr. P.P. Das) and Archaeometry (Prof. N. Zacharias, Dr. V. Kilikoglou). The summer school will include field trips and visits to some of the most famous archaeological sites of Messenia, such as Ancient Messene and the Nestor Palace in Pylos.

Graduates from Archaeology, Archaeometry, Conservation, Materials Science and other related fields are welcome to apply. Applicants should be enrolled at a Master's level programme or above and have a good knowledge of English.

After the successful completion of the Summer School, participants will be provided with a Certificate of Participation (4 ECTS credits).

Cost: The cost for the summer school is 750 € which includes the use of the laboratory facilities, local transport to archaeological sites and accommodation. Meals during the summer school and flights are not included. A non-refundable deposit of 200 € is required within two weeks of being offered a place on the summer school in order to secure your place.

The application deadline is 1 May, 2020. Places are limited to ensure a good ratio of students to lecturers and will be given on a first come, first served basis. To apply for **'e-CULT'** Summer School fill in the application form and send it to culttech@uop.gr.

For further information, contact us at culttech@uop.gr and (0030) 27210 65145.

ΔΙΑΛΕΞΗ ΤΗΣ ΕΤΑΙΡΕΙΑΣ ΤΩΝ ΦΙΛΩΝ ΤΟΥ ΕΘΝΙΚΟΥ ΑΡΧΑΙΟΛΟΓΙΚΟΥ ΜΟΥΣΕΙΟΥ

Αμφιθέατρο ΕΑΜ, Τοσίτσα 1.

Τρίτη 25 Φεβρουαρίου 2020

Δρ Γεωργιάννα Μωραϊτου, Προισταμένη του Τμήματος Συντήρησης, Φυσικών - Χημικών Ερευνών & Αρχαιομετρίας στο ΕΑΜ

"Η αρχαιομετρία στην Ελλάδα: τα πρώτα 100 χρόνια"

INTERNET SITES

A TASTE OF POMPEII – CARBONISED BREAD FT. DINNER, BY HESTON BLUMENTHAL ASHMOLEAN MUSEUM

The Ashmolean's Dr Paul Roberts joins Chef Director of the restaurant 'Dinner by Heston Blumenthal', Ashley Palmer-Watts, as he takes us through the steps to make carbonised bread inspired by the Ashmolean's 2019 exhibition 'Last Supper in Pompeii'.

Many thanks to the Dinner by Heston Blumenthal team for welcoming us and creating an incredible menu based on the exhibition. The menu will be available from 7 January 2020 at the Dinner restaurants.

Please visit the site:
https://www.youtube.com/watch?v=5rYCVPcG_H0#action=share

ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

BURIED BY VESUVIUS: THE VILLA DEI PAPIRI AT HERCULANEUM, KENNETH LAPATIN (ED.)

Bryn Mawr Classical Review 2020.01.40

Los Angeles: J. Paul Getty Museum, 2019. Pp. ix, 276.
ISBN 9781606065921. $65.00.

Reviewed by Nancy H. Ramage, Ithaca College (ramage@ithaca.edu)

This is a book with multiple authors on numerous topics, all shedding light on different aspects of the celebrated Villa dei Papiri at Herculaneum and its contents. Published by the J. Paul Getty Museum in Los Angeles, it accompanied an exhibition on the same topic, entitled "Buried by Vesuvius: Treasures from the Villa dei Papiri" (June 26 to October 28, 2019). Sumptuously illustrated on nearly every page, it brings to life many lesser-known works as well as the old chestnuts.
The book is dedicated to the memory of Benedicte Gilman, a much-revered editor of Getty books who died as the book was going to press.

Discovered in the 18th century by Karl Jacob Weber, the villa has generated enormous excitement ever since, whether for the paintings, sculptures and fine objects found therein, for the papyri that have frustrated generations of scholars trying to decipher them, or for the geologic and other scientific evidence for the pyroclastic flow that buried it.

Each of the introductory chapters gives a thorough background on the topic at hand, and is supported by footnotes and a full bibliography.
The overall high quality of the editing of the volume is seen in the frequent referencing of the catalogue descriptions in the opening essays of the book, and vice versa. Another feature of great value is the careful work of all the authors to fit the interior decoration—painting, mosaics, plaster, sculpture—into the proper place in the villa so that one gets a sense not only where they were found but, in addition, what the experience of being there might have been like.

The first chapters (Part I), by Kenneth Lapatin (who is also the editor) and Jeffrey Fish, set the villa in context by discussing its owner and its burial by the eruption of Mt. Vesuvius in AD 79. The villa is thought to have belonged to Lucius Calpurnius Piso Caesoninus, the father-in-law of Julius Caesar and patron of the Epicurean philosopher Philodemus. A chapter on the eruption of Vesuvius by Aldo Cinque and Giolinda Iroldo brings us up to date on the evidence for the pyroclastic flow, the beaches, and the altered coastline. As explained in their footnote 8, and in Lapatin's introduction (p. 3), the eruption is now thought to have occurred not in August of AD 79, as previously thought, but in the fall, that is, between late October and November or possibly even December of that year.

Part II has four chapters on the villa's rediscovery in the 18th century. The Bourbon-era excavations, described by Christopher Parslow, are fascinating, and although the author and others had already laid out the history of the excavations,1 this chapter is a breathtaking summary of the difficulties faced by the engineers and excavators. An essay by Carol Mattusch and Luigia Melillo, "Restoring the Finds," brings up a whole host of details on the history of restoration of the objects in the collection of Charles of Bourbon, king of Naples, with particular strength on bronzes.

A depressing story on the history of efforts to decipher the texts on the papyrus scrolls is related by Sofia Maresca. The machinery designed by Antonio Piaggio (also discussed in cat. 5) still serves as one of the best ways to unravel the papyri. One attempt after another failed to allow scholars to read the texts, and indeed in most cases ended up destroying the very objects they were trying to save and read. It is a useful and informative history of the efforts since their discovery. This chapter should be read in conjunction with a later one (chapter 15, by Brent Seales and Christy Chapman) on the technological advances that now allow a reading of the unfurled scrolls in a noninvasive method. Using tomography, a scanning electron microscope, and multispectral imaging, specialists can decipher the dark ink as distinct from the charred papyrus. With a technique called "virtual unwrapping," scholars can for the first time see texts that are deep within the layers of the scroll.

A chapter by Pablo Vázquez-Gestal, "Printing Antiquities: Herculaneum and the Cultural Politics of the Two Sicilies (1738-59)" summarizes the publications of Charles of Bourbon, beginning with the early Disegni Intagliati of 1746 (see also cat. 50), of which very few copies were printed, to the Prodromo and Catalogo of Ottavio Antonio Bayardi, all of which were dismally unsuccessful. The French scholar Anne Claude Philippe Caylus, among others, had been eager for reports of the antiquities, partly for his own major seven-volume publication that was underway.2 The essay shows how the king's several mediocre publications prepared the way for the great success of the eight-volume Antichità di Ercolano, which he also initiated.

The five chapters of Part III discuss the villa and its contents. Mantha Zarmakoupi uses digital reconstructions to describe the gardens and peristyles of the villa. She emphasizes the importance of the sound of water from the gurgling fountains that must have permeated the house and gardens. Valerio Papaccio discusses the inlaid marble floors, those that survive and others known only from drawings or paintings. One of the photographs (9.7), showing the rock tunnel receding into the distance, is evocative of what it must have been like to excavate here in the 18th century (see also fig. 13.6). Based on the dating of the floors, he proposes a date for the villa between 40 and 20 BC. Domenico Esposito discusses the paintings and stucco that decorated the walls, and suggests that they too support a date in the third quarter of the first century BC, or 40-25 BC. Here again, careful explanations allow the reader to understand where in the villa each surviving fragment originates.

A chapter on the sculpture and furnishings of the villa is by far the longest essay. The author, Christopher Hallett, believes that this was not a "sculpture collection," but rather an assemblage of objects acquired by the owner more like pieces of furniture to decorate his villa than artworks. On the other hand, Hallett singles out various themes, such as that in the library that was graced by herms and busts of Greek literary figures, including

some, like Demosthenes, that were repeated several times. Portraits of Hellenistic rulers, including Seleukos I of Syria (cat. 31) and Demetrios Poliorketes, king of Macedon (cat. 38), were found in the peristyle garden. The library of scrolls itself was perhaps surprisingly modest, but would have been typical of country villas where the works of the masters would be discussed by the owner and his intellectual friends. The owner himself must have been an Epicurean, given that the library was that of the Epicurean philosopher Philodemus of Gadara, and also because of the predominance of portraits of Epicurus (see cats. 8 and 9). The texts themselves are discussed in more detail in the following chapter by David Sider.

Part IV of the book has four chapters on the recent approaches to the study of the villa. Domenico Camardo discusses excavations at the site from the 1990s to 2008. All tunneling and digging had ceased in 1764 upon the death of Karl Jacob Weber, and the only knowledge of the villa and its finds was based on the remains in the Naples Archaeological Museum and the plan drawn by Weber, also housed in the museum. New excavations began in the 1980s, and especially in the ’90s, and were then renewed in this century. Much knowledge has been gained, such as the fact that the villa had at least two floors below the piano nobile. After following the Bourbon tunnels, a good deal of archaeological work in the open has allowed a remarkable understanding of the side of the villa toward the beaches and has revealed beautifully decorated architecture, some of which was being restored when the volcano hit.

Some remarkable finds from the excavations of 2007 are described by the excavator, Maria Paola Guidobaldi. At least three tripods and two straight-legged tables made of wood were covered with carved ivory veneer. The refined relief decoration includes a kalathiskos dancer, cupids, statues of Priapus, and a satyr with the baby Dionysus.

The topics of the chapters, then, range from the rediscovery in the 18th century to the details of the villa and its contents, including recent approaches to the study of the complex. Then follows a fully illustrated catalogue of 51objects, mostly sculpture but also individual frescoes, some of which had not been well published before.
Especially remarkable is a comparison of the printing history of fragments of the heads of Silenos and Medusa in the Antichità di Ercolano with the less well known Disegni Intagliati (cats. 47-50). Other entries include the plan of the Villa dei Papiri by Weber (cat. 1), and the papyrus-unrolling machine invented by Father Piaggio (cat. 5). Among the bronze sculptures are the portraits of Epicurus and Demosthenes, the running piglet, the so-called Herculaneum Dancers, and busts of the Doryphoros and an Amazon (cats. 8-9, 11, 12, 20-21, 29-30) and many others. Unfortunately, the entries are not individually listed in the table of contents, thus making it difficult to find specific items except by thumbing through the book. That omission seems to this reviewer to be the chief drawback. Also, while there is a discussion of the restoration of bronzes and the making of bronze copies (p. 26), there is little mention of the industry of making copies of marble statues and other marble decorations in the villa. The efforts of sculpture restorers like Bartolomeo Cavaceppi and later Vincenzo Pacetti to make marble copies and derivatives of famous newly discovered sculptures, and restorations from fragments, would have added a useful dimension to the volume.3

The illustrations are sumptuous throughout. Not only photographs but also plans are revealing; even for those who are already familiar with many or most of the sculptures, it is stunning to look at the gatefold plan (pp. 138-139) showing the findspot of each piece.

The price of the volume, which must have been heavily subsidized by the Getty, is extremely reasonable. The book is easily accessible and free of jargon, thus making it useful for students and scholars alike. It is an enormous contribution to the literature on Herculaneum in general and on the Villa dei Papiri in particular, and will be a crucial source for all future research on these and related topics.

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Notes:

1. Christopher C. Parslow, Rediscovering Antiquity: Karl Weber and the Excavation of Herculaneum, Pompeii, and Stabiae (New York 1995); Mantha Zarmakoupi, Designing for Luxury on the Bay of Naples: Villas and Landscapes (c. 100 BCE-79CE) (Oxford 2014); and Maria Paola Guidobaldi and Domenico Esposito, "New Archaeological Research at the Villa dei Papiri in Herculaneum," in Mantha Zarmakoupi, The Villa of the Papyri at Herculaneum: Archaeology, Reception, and Digital Reconstruction (Berlin 2010), pp. 21-62.
2. Recueil d'antiquités égyptiennes, étrusques, greques e romaines (Paris 1752-67).
3. History of Restoration of Ancient Stone Sculptures, ed. Janet Burnett Grossman, Jerry Podany, and Marion True (J. Paul Getty Museum 2003).

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Please visit the site: http://bmcr.brynmawr.edu/2020/2020-01-40.html

TECHNOLOGY OF THE ANCIENT NEAR EAST. FROM THE NEOLITHIC TO THE EARLY ROMAN PERIOD, BY JILL L. BAKER

Bryn Mawr Classical Review 2020.01.27

London; New York: Routledge, 2019. Pp. x, 326. ISBN 9780815393689. £29.99. ISBN 9780815393696. (pb).

Reviewed by Shiyanthi Thavapalan, Joukowsky Institute for Archaeology and the Ancient World, Brown University
(shiyanthi_thavapalan@brown.edu)

The volume under review by Jill Baker is envisioned as a textbook about the most important technologies from ancient Egypt, Mesopotamia (modern Iraq and parts of Iran and Syria), Anatolia (modern Turkey and parts of Armenia) and Canaan (modern Israel, Palestine, Jordan and parts of Syria), that seeks to reveal how they contributed to the creation and development of these civilizations. Baker's goal is to demonstrate that these technologies, many of which she argues are antecedents to devices used in our own world of electricity and smart phones, continue to be relevant and useful today. Most of the existing studies on this topic are field-specific, she observes, and thus do not always link individual technologies with each other or with the wider Near East. Including the introduction and summary, there are 19 thematically-divided chapters. There are 80 black and white images generously peppered throughout the book. These include photographs, architectural plans, drawings and helpful explanatory schematics.

Unfortunately, due to the small size and poor quality of the images from the public domain, it is sometimes not possible to make out the details described in the caption (e.g., the details of the smelting activity are hardly visible in Fig. 5.3).

In addition to setting the geographical and chronological parameters of the study, the introduction provides useful definitions of what is meant by "technology" and related terms like "discovery," "invention" and "innovation." A brief description of the many types of ancient sources utilized by the author follows, giving the reader an impression of the interdisciplinary nature of the task at hand. Baker then looks at the most important materials exploited by humans since earliest history: stone, wood (Chapters 3-5) and bonding agents like glue, plaster, mortar, cement and bitumen (Chapter 6). Given the chronological and geographical scope of the book, it is difficult to be comprehensive and so some topics have been left out. For example, ornamental stones (for jewelry, amulets, figurines) and minerals employed as pigments are not treated in the chapter on stones. The discussion on metals (chapter 5) focuses on extraction (mining, melting, smelting) rather than metal-working (alloying, casting, shaping). Then again, Baker takes the time to explain basic technical terminology and processes, which will be helpful for students. The overview of the geological particularities of the four regions of the Near East treated in the book is balanced with behavioural and cognitive explanations for why certain types of building materials were utilized. Changes in production techniques are mapped onto changes in practices —e.g., the shift from collecting to quarrying stone was accompanied

by new ways of breaking and cutting (p. 21) as well as innovations in transportation (pp. 24-25).

The next portion of the book concerns itself with how materials were used towards specific technological goals. Chapter 7 covers ancient machines, methods of engineering and sources of energy. Chapters 8 and 9 deal with construction and warfare respectively, drawing even on Greek evidence (e.g., for siege craft and battle tactics) as comparanda. The discussion of textiles (chapter 10) also takes basketry and footwear into account. Murex is given undue precedence over the more commonly exploited vegetable dyes in the section on dyeing (pp. 134-135), where the unique collection of dyeing recipes from the Mesopotamia city of Sippar (BM 62788+82978) should have been mentioned.1 Chapter 11 on ceramics begins by reflecting on the importance of studying pottery and goes on to describe techniques and tools, including the various types of kilns that have been excavated.

In her discussion of glass technology (chapter 11), Baker has overlooked the large and well-known corpus of Akkadian language glass-making recipes.2 The greater part of the study on medicine (chapter 13) focuses on Egyptian medical papyri and on the attempt to draw parallels between ancient knowledge and practices and modern ones.3 More systematic citations in the lists (pp. 182-185) of plant- and mineral-based ingredients used in therapies would have been helpful. Finally, with its exploration of daily life (chapter 14), timekeeping mechanisms (chapter 16) and food (chapter 17), the book introduces the reader to how the study of technology can tell us something about bodily and sensorial experiences in the past.

As mentioned, Baker's stated objective was to write a "first resource" for readers of all fields and generations interested in technologies of the ancient Near East that aims to "underscore the breadth and interconnection of ancient technological knowledge" (p. 2). In its approach, her book is a history of "materials technology", which is the study of the characteristics and uses of natural substances as well as the manufacture of synthetic media. It attempts to understand the functional role of materials and tools and looks at technology as a way of mapping human progress. Individual discussions cover techniques of production, issues of resources and cost, market forces and to some extent, Baker also addresses how technological knowledge was circulated. What the book does not do is address more recent trends in the discipline, which seek to situate "materials technology" within its cultural context—by observing behaviors, tracing relationships and generally underscoring the role of technology and material culture in social life.

Purporting to cover some 9,000 years of history, the chronological span of the book is extremely ambitious. Given this, it is unsurprising that the treatment of the diverse textual, visual and archaeological sources is uneven and at times misleading. The bulk of the evidence considered is actually more restricted, dating between ca. 3000-500 BCE. There is, moreover, a heavy dependence on Egyptian sources without any methodological justification and the omission of certain well-known discussions—the Anatolian evidence in the section on metallurgy, to take one example—is striking. For general topics (e.g., economy, trade, history of excavations), Baker relies on summaries provided in encyclopedias and companion volumes, some of which are out of date. Importantly, as the author makes exclusive use of English language literature, key research has been omitted.

Moreover, scattered in the prose are some generalizing statements that are neither supported by an evaluation of the empirical evidence at hand nor any theoretical discussion. Declarations like "human experience is similar no matter the culture or location" (p. 6), "technology widens the gap between socio-economic classes, allowing the rich to become very wealthy and the poor to remain poor" (p. 7) or "In most ancient nations, the ruling authority staked claim and held sole rights to valuable mine deposits" (p. 36) are jarring and misinform the reader. The volume also contains a number of factual errors: the ships are engraved and painted in Hatshepsut's temple, not grave (p. 63); letters written by women from Assur to their husbands at Kanesh (p. 125), not the other way around; there are ancient recipes for glass-making (p. 152). Words in ancient languages are spelled inconsistently (e.g. ashipu on p. 174-175 and āšipu on p. 191; ashipu but mašmaššu on p. 174).

An aspect of the book that will stimulate students is Baker's consistent effort to highlight the relevance of studying ancient technologies. She does this by drawing parallels with modern techniques and tools and by tracing the long history of the use of certain materials. She also reflects on how the media and educational programming like the Discovery Channel episodes have framed the modern public's ideas about ancient technologies. Overall, the book is a useful starting point for students interested in learning about the materials and technologies of the Bronze and Iron ages in the Near East. It is, however, best read alongside specialized studies as well as approaches to the history of technology that look at its social and symbolic dimensions.

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Notes:

1. An edition of the text may be found in: E. Leichy. "A Collection of Recipes for Dyeing," in Studies in Honor of Tom B. Jones (AOAT 203), M. A. Jr. Powell, R. H. Sack (eds.). Neukirchen-Vluyn, 1979. Pp. 15-20. For a translation of the manuscript that takes the newly joined fragment (BM 82978) into account, see: I. L. Finkel and H. Granger-Taylor and D. Cardon. "A Clay Tablet from Ancient Babylonia with Recipes for Dyeing Wool," in: Teintures précisieuses de la Méditerranée: pourpre, kermes, pastel, D. Cardon (ed.). Carcassonne and Terrassa: Musée des Beaux-arts, 1999. Pp. 64-65.
2. A. L. Oppenheim, R. H. Brill, R. H. Barag and A. von Saldern. Glass and Glassmaking in Ancient Mesopotamia. An Edition of the Cuneiform Texts which contain Instructions for Glassmakers with a Catalogue of Surviving Objects. New York, 1970; A. L. Oppenheim. "More Fragments with Instructions for Glassmaking," Journal of Near Eastern Studies 32 (1973). Pp. 188-193.
3. For two different approaches to the subject of Mesopotamian medicine, see: J. Scurlock and B. R. Anderson. 2005. Diagnoses in Assyrian and Babylonian Medicine: Ancient Sources, Translations, and Modern Medical Analyses. Urbana and Chicago: University of Illinois Press, 2005; M. Geller. Ancient Babylonian Medicine: Theory and Practice. Chichester: Wiley-Blackwell, 2010.

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Please visit the site: http://bmcr.brynmawr.edu/2020/2020-01-27.html

ΕΙΔΗΣΕΙΣ - NEWS RELEASE

ARCHAEOLOGICAL DISCOVERIES ARE HAPPENING FASTER THAN EVER BEFORE AND IT'S HELPING REFINE THE HUMAN STORY, BY MARY PRENDERGAST AND ELIZABETH SAWCHUK

In 1924, a 3-year-old child's skull found in South Africa forever changed how people think about human origins.

The Taung Child, our first encounter with an ancient group of proto-humans or hominins called australopithecines, was a turning point in the study of human evolution. This discovery shifted the focus of human origins research from Europe and Asia onto Africa, setting the stage for the last century of research on the continent and into its "Cradles of Humankind."

Few people back then would've been able to predict what scientists know about evolution today, and now the pace of discovery is faster than ever. Even since the turn of the 21st century, human origins textbooks have been rewritten over and over again. Just 20 years ago, no one could have imagined what scientists know two decades later about humanity's deep past, let alone how much knowledge could be extracted from a thimble of dirt, a scrape of dental plaque or satellites in space.

Human fossils are outgrowing the family tree In Africa, there are now several fossil candidates for the earliest hominin dated to between 5 and 7 million years ago, when we know humans likely split off from other Great Apes based on differences in our DNA.

Although discovered in the 1990s, publication of the 4.4 million year old skeleton nicknamed "Ardi" in 2009 changed scientists' views on how hominins began walking.

Rounding out our new relatives are a few australopithecines, including Australopithecus deryiremeda and Australopithecus sediba, as well as a potentially late-surviving species of early Homo that reignited debate about when humans first began burying their dead.

Perspectives on our own species have also changed. Archaeologists previously thought Homo sapiens evolved in Africa around 200,000 years ago, but the story has become more complicated. Fossils discovered in Morocco have pushed that date back to 300,000 years ago, consistent with ancient DNA evidence. This raises doubts that our species emerged in any single place.

This century has also brought unexpected discoveries from Europe and Asia. From enigmatic "hobbits" on the Indonesian island of Flores to the Denisovans in Siberia, our ancestors may have encountered a variety of other hominins when they spread out of Africa. Just this year, researchers reported a new species from the Philippines.

Anthropologists are realizing that our Homo sapiens ancestors had much more contact with other human species than previously thought. Today, human evolution looks less like Darwin's tree and more like a muddy, braided stream.

Ancient DNA reveals old relationships

Many recent discoveries have been made possible by the new science of ancient DNA.

Since scientists fully sequenced the first ancient human genome in 2010, data from thousands of individuals have shed new insights on our species' origins and early history.

One shocking discovery is that although our lineages split up to
800,000 years ago, modern humans and Neanderthals mated a number of times during the last Ice Age. This is why many people today possess some Neanderthal DNA.

The 2010 excavation in the East Gallery of Denisova Cave, where the ancient hominin species known as the Denisovans were discovered. Bence Viola. Dept. of Anthropology, University of Toronto, CC BY-ND.

Ancient DNA is how researchers first identified the mysterious Denisovans, who interbred with us and Neanderthals. And while most studies are still conducted on bones and teeth, it is now possible to extract ancient DNA from other sources like cave dirt and 6,000-year-old chewing gum.

Genetic methods are also reconstructing individual and family relationships, and connecting ancient individuals to living peoples to end decadeslong debates.

The applications go far beyond humans. Paleogenomics is yielding surprising discoveries about plants and animals from ancient seeds and skeletons hidden in the backrooms of museums.

Natural history museums hold a wealth of information, some of which can only be tapped through new biomolecular methods. Scientists analyze modern and fossil animal skeletons to ask questions about the past using ancient proteins. Mary Prendergast at National Museums of Kenya, CC BY-ND

Biomolecules are making the invisible visible

DNA is not the only molecule revolutionizing studies of the past.

Paleoproteomics, the study of ancient proteins, can determine the species of a fossil and recently linked a 9-foot tall, 1,300-pound extinct ape that lived nearly 2 million years ago to today's orangutans.

Dental calculus – the hardened plaque that your dentist scrapes off your teeth – is particularly informative, revealing everything from who was drinking milk 6,000 years ago to the surprising diversity of plants, some likely medicinal, in Neanderthal diets. Calculus can help scientists understand ancient diseases and how the human gut microbiome has changed over time. Researchers even find cultural clues – bright blue

lapis lazuli trapped in a medieval nun's calculus led historians to reconsider who penned illuminated manuscripts.

Lipid residues trapped in pottery have revealed the origins of milk consumption in the Sahara and showed that oddly shaped pots found throughout Bronze and Iron Age Europe were ancient baby bottles.

Researchers use collagen-based "barcodes" of different animal species to answer questions ranging from when Asian rats arrived as castaways on Africa-bound ships to what animals were used to produce medieval parchment or even to detect microbes left by a monk's kiss on a page.

Big data is revealing big patterns

While biomolecules help researchers zoom into microscopic detail, other approaches let them zoom out. Archaeologists have used aerial photography since the 1930s, but widely available satellite imagery now enables researchers to discover new sites and monitor existing ones at risk. Drones flying over sites help investigate how and why they were made and combat looting.

Archaeologists increasingly use technology to understand how sites fit into their environment and to document sites at risk. Here, a drone captured a tell (a mound indicating build-up of ancient settlements) in the Kurdistan Region of Iraq. Jason Ur, CC BY-ND

Originally developed for space applications, scientists now use LIDAR – a remote sensing technique that uses lasers to measure distance – to map 3D surfaces and visualize landscapes here on Earth. As a result, ancient cities are emerging from dense vegetation in places like Mexico, Cambodia and South Africa.

Technologies that can peer underground from the surface, such as Ground Penetrating Radar, are also revolutionizing the field – for example, revealing previously unknown structures at Stonehenge. More and more, archaeologists are able to do their work without even digging a hole.

Teams of archaeologists are combining big datasets in new ways to understand large-scale processes. In 2019, over 250 archaeologists pooled their findings to show that humans have altered the planet for thousands of years, for example, with a 2,000-year-old irrigation system in China. This echoes other studies that challenge the idea that the Anthropocene, the current period defined by human influences on the planet, only began in the 20th century.

New connections are raising new possibilities These advances bring researchers together in exciting new ways. Over 140 new Nazca Lines, ancient images carved into a Peruvian desert, were discovered using artificial intelligence to sift through drone and satellite imagery. With the wealth of high-resolution satellite imagery online, teams are also turning to crowdsourcing to find new archaeological sites.

Although new partnerships among archaeologists and scientific specialists are not always tension-free, there is growing consensus that studying the past means reaching across fields.

The Open Science movement aims to makes this work accessible to all.
Scientists including archaeologists are sharing data more freely within and beyond the academy. Public archaeology programs, community digs and digital museum collections are becoming common. You can even print your own copy of famous fossils from freely available 3D scans, or an archaeological coloring book in more than 30 languages.

Efforts to make archaeology and museums more equitable and engage indigenous research partners are gaining momentum as archaeologists consider whose past is being revealed. Telling the human story requires a community of voices to do things right.

Studying the past to change our present

As new methods enable profound insight into humanity's shared history, a challenge is to ensure that these insights are relevant and beneficial in the present and future.

In a year marked by youth-led climate strikes and heightened awareness of a planet in crisis, it may seem counterproductive to look back in time.

Yet in so doing, archaeologists are providing empirical support for climate change and revealing how ancient peoples coped with challenging environments.

As one example, studies show that while industrial meat production has serious environmental costs, transhumance – a traditional practice of seasonally moving livestock, now recognized by UNESCO as intangible cultural heritage – is not only light on the land today, but helped promote biodiversity and healthy landscapes in the past.

Archaeologists today are contributing their methods, data and perspectives toward a vision for a less damaged, more just planet.

While it's difficult to predict exactly what the next century holds in terms of archaeological discoveries, a new focus on "usable pasts"
points in a positive direction.

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Please visit the site: https://daily.jstor.org/archaeological-discoveries-are-happening-faster-than-ever-before/ [Go there for many pix and for embedded linx]

CENTURY-OLD LUNGS MAY PUSH ORIGIN OF MEASLES BACK 1,500 YEARS, BY KATHERINE J. WU

The viral infection may have made its first hop into humans when large cities arose

Nowadays, it's hard not to have measles on the mind. Spurred in part by successful anti-vaccination campaigns, global cases of this viral infection reached their highest point in more than a decade during the first six months of 2019. In 2018, outbreaks killed more than 140,000 people worldwide.

But the scourge of measles isn't just a problem of the present. This deadly disease has been plaguing human populations for centuries—perhaps even millennia. In a paper published last week on the preprint server bioRxiv, a team of researchers suggests the measles virus may have first tangoed with human immune systems as early as 345 B.C., or 1,500 years earlier than previously estimated.

Though the findings have yet to be published in a peer-reviewed journal, they could push the origins of measles further back than ever before, reports Kai Kupferschmidt for Science magazine.

Prior investigations of measles' evolutionary roots have been stymied by a lack of genetic data. Building such family trees means rewinding the clock—a process that typically requires multiple viral genomes, each isolated from different points in time, to estimate when separate lineages first split apart.

In 2010, a team of Japanese researchers tried their hand at this process with a handful of genomes from the measles virus, as well as some from its cattle-infecting cousin, the now-eradicated rinderpest virus. The group concluded that the former may have emerged in people around the 11th or 12th century A.D., perhaps after branching off from an ancestor that only infected non-human animals. Per Inverse's Emma Betuel, this result seemed roughly in line with analyses of historical accounts, which tentatively pinpoint the virus' start in humans to around 1000 A.D.

But only three of the measles genomes known to science predate 1990, leaving the oldest branches of the virus' family tree sorely lacking.

So, when Sebastien Calvignac-Spencer, an evolutionary biologist at the Robert Koch Institute, stumbled upon a set of 108-year-old measles-infected lungs in the basement of Berlin's Museum of Medical History, he and his colleagues rushed to unravel the genetic material encoded within.

The lungs' original owner was a 2-year-old girl who died of measles-related pneumonia in June 1912. After the tissues were fixed in formalin, they spent more than a century in obscurity. Thanks to careful preservation, however, the viral RNA found inside was still intact enough to yield a genome more than 100 years later. Paired with other genetic sequences, including a new set isolated from a virus dating to 1960, the data reconfigures

the measles family tree. The virus' hop into humans, the team's analysis suggests, could have occurred as early as the fourth century B.C.

This date is just an estimate, and more samples and genetic sequences will be necessary to confirm such an ancient origin, says Monica Green, a historian of infectious diseases at Arizona State University who wasn't involved in the study, to Kupferschmidt.

Still, the team's new timeline happens to coincide with an important juncture in human history: the rise of large cities, home to populations of 250,000 or more. These swollen urban hubs, the researchers say, are about the minimum size a fast-spreading virus would need to sustain itself. Had measles tried to spread throughout smaller, more isolated groups, it probably wouldn't have left enough survivors who were still susceptible to infection, thereby rapidly blipping back out of existence.

That's just a theory for now. But if measles did indeed have an early arrival, its presence will likely be detectable in other medical artifacts from antiquity. The new study's findings suggest those samples may yet be found and analyzed, Mike Worobey, an evolutionary biologist at the University of Arizona who also wasn't involved in the study, tells Kupferschmidt.

Worobey adds, "Just being able to get the measles virus out of these old, wet specimens, … that sets the stage for all sorts of exciting work."

Please visit the site: https://www.smithsonianmag.com/smart-news/century-old-lungs-may-push-origin-measles-back-1500-years-180973906/

RAIN, RAIN, GO AWAY: DEALING WITH WASTEWATER AND RAIN IN ANCIENT EGYPT, BY HEIDI KÖPP-JUNK

An efficient drainage system for rain and wastewater is important for every complex society. Even today, water discharge is a central issue in Egypt, especially in the global metropolis Cairo. While irrigation is frequently discussed in Egyptology, dewatering systems are only rarely investigated.

No known depictions or textual sources mention dewatering systems, but there are a variety of archeological finds that elucidate the range, innovation, and high quality of ancient Egyptian engineering skills long before the arrival of Roman water management techniques.

Egyptian methods for dewatering in temples, tombs, and houses are well attested from the middle of the 3rd millennium BCE onward. For example, dewatering systems are used for rain as well as wastewater from bathrooms and kitchens, and there is evidence for these systems in houses, temples, and tombs. Moreover, used water also had to be removed from industrial sites such as those used for dyeing, washhouses, and mummification workshops, since considerable amounts of water were necessary during the embalming process.

There were many methods for channeling water, including canals and pipelines. Canals were either built with stone blocks or slabs, or were cut in a u-shape into stone blocks, which were either covered or left open. It is not always easy to determine whether an example was originally an open channel or whether covering stones were removed later. The u-shaped channels were made of impermeable sandstone, granite, or mostly commonly, limestone. Gutters were usually between 10–20 cm wide, but their depths varied greatly, from 0.2–20 cm. Gutters cut directly into bedrock or which were sunk into the floors of a building are less frequent.

Pipelines were usually made of clay, although a single metal example is also known. These clay pipes were not reused vessels but were produced specifically for water management, with one fitting neatly inside the other.

The diameter ranges from 4.5 cm, as attested in the Repit-Temple at Athribis, to 30-38 cm, as in Temple A at Tell el-Balamun. The pipes are often protected by a clay bed and covered by tiles. Tubes made of wood or lead such as in Rome or Greece are not archaeologically documented in ancient Egypt.

Downspouts were rare, but complex systems for roof drainage were used in temples since the middle of the 3rd millennium BCE. These drainage systems often ending in gargoyles, which are a typical element of dewatering systems.

Usually, only the beginning or endpoint of the pipeline system, or a piece in the middle is attested; complete systems are not preserved.

Systems end in basins or vessels, dry wells, shafts, and waste pits, or they are directed toward the Nile. In one instance, the water was left to seep into the ground.

Aqueducts are not typical Egyptian features, nor are other water features. Piping systems that use water to generate pressure and movement are not attested with any certainty. Once developed and proven effective, traditional systems continued to be used. No technology completely replaced another: new methods were used parallel to existing ones. U-shaped channels are documented first, and clay tubes were added later. Covered channels with a very large diameter are well-documented in Graeco-Roman times. A copper pipeline is attested only once, so apparently this technology did not prevail.

While integrating a bend in a gutter stone in order to lead water around a corner is documented, no curved clay pipes are known.

If a pipeline was composed of clay pipes, individual straight segments were arranged in a bend.

Beginning in the 3rd millennium BCE, monumental Egyptian structures were equipped with dewatering systems, like Khufu's pyramid in Giza (constructed ca. 2620-2580 BCE). The rainwater was collected and passed through stone channels, leading to covered or uncovered basins, or it was allowed to seep into the soil. In the southern fortress of Buhen (about 2000 BCE), there were installations in some of the streets meant to transfer the water from inside the fortress to the outside in order to protect the buildings.

At Buhen stone blocks with u-shaped cutouts were installed in the center of the streets, which were paved with fired mudbricks. At the intersections of these stones, additional stones were placed underneath to prevent tilting. The water drains passed underneath the walls, led outside of the fortress, and were then directed towards the Nile.

While a few house models show rainwater systems, gargoyles are only represented on mastaba tombs and the most complex systems were found in temples.

Temple roofs were sometimes slightly inclined or equipped with other installations in order to carry the rainwater from the roof to the lower level, leading the water to gargoyles or eaves. The water then fell into the temple courtyards, where it was collected and drained outside the temple walls. Sometimes this was done by means of covered stone canals as in the Repit-Temple at Athribis, which ended in a transport or irrigation canal.

It is apparent that Egyptian water engineers were very highly skilled since earliest times. The development and use of individual components demonstrates a high level of understanding of the problems of drainage and technical proficiency. The dewatering systems were designed with careful consideration of site conditions, including geology and gradients, and the engineers utilized techniques developed since the middle of the 3rd millennium BCE, like pipelines, covered or uncovered channels, and shower trays. Even today, gullies in the form of basins sunk into the ground and covered with a perforated lid are utilized.

The primary difference is that instead of a bend channel being sunk into a stone block, today's pipes are made of steel or PVC.

One area that has seen significant improvement is roof drainage. The ancient Egyptian principle of roof drainage with inclines, gutters, and gargoyles finds its modern equivalent in sloping roofs with gutters, but these systematically move the water through a downspout instead of just letting it fall from the gargoyles into the courtyards.

Apart from systems for rainwater, those for waste water are attested in bathrooms, found in temples, tombs, palaces, and houses of the elite. The earliest known bathrooms are located in tombs from Dynasty 2 at Saqqara. They usually have a rectangular structure, although in one case, dating to Dynasty 3, it is round. Bathrooms of the elite were found in Amarna, and royal bathrooms are attested in the palaces of Malqata and Medinet Habu, with the latter often being mistakenly referred to as a toilet.

The bathrooms, often consisting of a monolithic stone slab and tiled sidewalls, were constructed like a modern shower tray with raised edges. On one side, a hole leading to a spout was installed, transferring the used water into a basin. From this basin, it had to be removed with vessels, or was evacuated outside the house with the help of a pipe. Another method was to transfer it from the stone slab and its spout directly into a vessel and remove it once it was filled.

The bather stood on the large stone slab and either poured water over himself or was showered by servants. The water was provided in vessels that were positioned next to the stone slab. There was no direct water supply by canals or pipelines, neither in kitchens nor in bathrooms.

Whether the water was warmed or cold is unclear, but it probably depended on the outside temperature and the season. By pouring the water through baskets, the same effect as a modern showerhead was created.

Toilets were also known in ancient Egypt. Some were permanently installed like those in Amarna, whereas others were movable and could even be used during travels like the one found in the tomb of Kha, now in the Museo Egizio in Turin. The permanent toilets consist of two walls parallel to each other with a gap in between. The toilet seat was made of wood, terracotta, or limestone. Under the seat, a vessel with sand was positioned, which was replaced after use. Therefore no real water closets existed in ancient Egypt.

Despite the lack of textual and pictorial evidence regarding drainage, the archaeological and architectural evidence for wastewater and rain water technology shows that these problems were being addressed from the Old Kingdom onward. The engineering abilities of Pharaonic Egypt did not rank behind those of Roman times, but form the basis for their emergence more than two thousand years later.

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Heidi Köpp-Junk is a post-doctoral fellow in Egyptology at the University of Trier.

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THE WORLD'S OLDEST-KNOWN RECIPES DECODED, BY ASHLEY WINCHESTER

A team of international scholars versed in culinary history, food chemistry and cuneiform studies has been recreating dishes from the world's oldest-known recipes.

The instructions for lamb stew read more like a list of ingredients than a bona fide recipe: "Meat is used. You prepare water. You add fine-grained salt, dried barley cakes, onion, Persian shallot, and milk. You crush and add leek and garlic." But it's impossible to ask the chef to reveal the missing pieces: This recipe's writer has been dead for some 4,000 years.

Instead, a team of international scholars versed in culinary history, food chemistry and cuneiform (the Babylonian system of writing first developed by the ancient Sumerians of Mesopotamia) have been working to recreate this dish and three others from the world's oldest-known recipes. It's a sort of culinary archaeology that uses tablets from Yale University's Babylonian Collection to gain a deeper understanding of that culture through the lens of taste.

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• The Iraq city that opens its doors
• Israel's millennia-old 'biblical diet'
• The birthplace of ice cream

"It's like trying to reconstruct a song; a single note can make all the difference," said Gojko Barjamovic, pointing to the paperback-sized tablets under glass at the Yale Peabody Museum of Natural History. Barjamovic, a Harvard University Assyriology expert, retranslated the tablets and put together the interdisciplinary team tasked with bringing the recipes back to life.

A team of scholars are recreating ancient recipes from cuneiform tablets (Credit: Yale Babylonian Collection)

Three of Yale's tablets date to around 1730BC, and a fourth is from about 1,000 years later. All of the tablets are from the Mesopotamian region, which includes Babylon and Assyria – what is today the regions of Iraq south of Baghdad and north of Baghdad, including parts of Syria and Turkey. Of the older three tablets, the most intact is more of a listing of ingredients that amounts to 25 recipes of stews and broths; the other two, containing an additional 10-plus recipes, go further in depth with cooking instructions and presentation suggestions, but those are broken and therefore not as legible.

The challenge was to peel back the layers of history while also maintaining authenticity amid the limitations of modern ingredients.

"They're not very informative recipes – maybe four lines long – so you are making a lot of assumptions," said Pia Sorensen, a Harvard University food chemist who worked, along with Harvard Science and Cooking Fellow Patricia Jurado Gonzalez, on perfecting

the proportions of ingredients using a scientific approach of hypothesis, controls and variables.

"All of the food materials today and 4,000 years ago are the same: a piece of meat is basically a piece of meat. From a physics point of view, the process is the same. There is a science there that is the same today as it was 4,000 years ago," Jurado Gonzalez said.

The food scientists used what they know about human tastes, preparation essentials that don't drastically change over time, and what they hypothesised might be correct ingredient proportions to come up with their best guess as to the closest approximation of an authentic recipe.

"This idea that we can be guided by what works – if it's too liquidy, it's going to be a soup. By looking at the material parameters, we can zoom in on what it is" – in most cases, a stew, Sorensen said.

What the researchers revealed shows, in part, the evolution of a lamb stew that is still prevalent in Iraq, hand-in-hand with a glimpse back in time at the "haute cuisine of Mesopotamia" that highlights the sophistication of 4,000-year-old chefs, said Agnete Lassen, associate curator of the Yale Babylonian Collection.

There is a notion of 'cuisine' in these 4,000-year-old texts The four dishes culled from the list-style tablet also each have unique uses. Pashrutum, for example, is a soup one might serve someone suffering from a cold, Lassen said, though the meaning of this bland broth accented by leek, coriander and onion flavours translates as "unwinding". Elamite broth ("mu elamutum"), on the other hand, is among two foreign (or "Zukanda") dishes listed in the tablets, Barjamovic said.

He equates this to the present-day ubiquity of "foreign" dishes like lasagne or skyr or hummus that have been taken out of their homeland and adapted to new palates, and are indicative of contact between neighbouring cultures.

"There is a notion of 'cuisine' in these 4,000-year-old texts. There is food which is 'ours' and food that is 'foreign,'" Barjamovic said.
"Foreign is not bad – only different, and sometimes apparently worth cooking, since they give us the recipe."

Tuh'u recipe

Ingredients:
1 lb leg of mutton, diced
½ c rendered sheep fat
1 small onion, chopped
½ tsp salt
1 lb beetroot, peeled and diced
1 c rocket, chopped
½ c fresh coriander, chopped
1 c Persian shallot, chopped
1 tsp cumin seeds
1 c beer (a mix of sour beer & German Weißbier) ½ c water ½ c leek, chopped

2 garlic cloves, peeled and crushed

For the garnish:
½ c fresh coriander, finely chopped
½ c kurrat (or spring leek), finely chopped
2 tsp coriander seeds, coarsely crushed

Instructions: Heat sheep fat in a pot wide enough for the diced lamb to spread in one layer. Add lamb and sear on high heat until all moisture evaporates. Fold in the onion and keep cooking until it is almost transparent. Fold in salt, beetroot, rocket, fresh coriander, Persian shallot and cumin. Keep on folding until the moisture evaporates. Pour in beer, and then add water. Give the mixture a light stir and then bring to a boil. Reduce heat and add leek and garlic.
Allow to simmer for about an hour until the sauce thickens.

Pound kurrat and remaining fresh coriander into a paste using a mortar and pestle. Ladle the stew into bowls and sprinkle with coriander seeds and kurrat and fresh coriander paste. The dish can be served with steamed bulgur, boiled chickpeas and bread.

Source: Food in Ancient Mesopotamia, Cooking the Yale Babylonian Culinary Recipes, with permission from co-author and translator Gojko Barjamovic.

Though its blood-based broth would be completely forbidden by today's Islamic and Jewish tradition, the Elamite broth dish originated in what is now Iran, and also uses dill, an ingredient not otherwise mentioned among the tablets, Barjamovic and Lassen said. This is a distinction still apparent today: Iraqi cuisine rarely uses dill, whereas it is common in Iranian cuisine, which may indicate the pattern was established millennia ago, Barjamovic said. Nasrallah notes the "foreign" designation is indicative of trade between the two cultures, and an appreciation for tastes not commonly associated with local cuisine. The Babylonians might have associated the taste of dill with Elamite cuisine in the same way that we associate fresh coriander with Hispanic foods, Nasrallah said.

There's also an element of showmanship and skill that carries over among chefs through the millennia, the researchers noted. Just as today's molecular gastronomers might delight in plating a dish to play with diners' expectations, so, too, did Mesopotamian chefs in preparing elaborate feasts fit for high society. Think: the Ferran Adrià flourish of ancient Assyria.

One dish resembles a chicken pot pie, with layers of dough and chunks of bird smothered by a sort of Babylonian béchamel sauce, said culinary historian and Iraqi cuisine expert Nawal Nasrallah, whose research on medieval Arabic foods helped tie the ancient tablets to later cooking techniques from the same region. Its presentation also contains an element of surprise, she said. The bird dish was served covered by a crusty lid, which diners then opened to reveal the meat inside. It's a food-within-a-food technique Nasrallah sees repeated in the 10th-Century Baghdadi cookbook Kitab al-Tabikh ("Cookery Book"), describing local medieval traditions, and again in modern Iraqi cuisine.

"Today, in the Arab world and particularly in Iraq, we pride ourselves in stuffed dishes like dolma. We kind of inherited this tendency of showmanship of cooks," Nasrallah said. "In this way, I was really fascinated by the continuity of the cuisine and what has survived."

This sophistication of preparation in the Babylonian food includes the use of colourful ingredients like saffron or coriander, parsley and chard to appeal to the eye and the palate, as well as employing a fish sauce sourced from the abundance of the Tigris and Euphrates rivers to add an umami element to the dishes, Nasrallah said. Today's stews from the region are usually red, from tomatoes (which arrived centuries later), but the flavour elements of cumin, coriander, mint, garlic and onions are still recognisable. Rendered sheep's tail fat (in Arabic, alya) for instance, was considered a delicacy and an "indispensable ingredient in Iraq, until around the 1960s", Nasrallah said.

"I see the same tendency from ancient times to today; we don't just add salt and black pepper, we add a combination of spices to enhance the aroma, to enhance the flavour, and we don't just add it all at once, we add it in stages and we allow the stew to simmer," Nasrallah said.

The lamb stew, me-e puhadi, is meant to be eaten with barley cakes crumbled into the liquid, as one might do today with bread to sop up a soup. The scholars' resulting version of the dish offers a hearty taste and texture teased out from months of trial and error and by using the scientific method of variables and controls to unravel the recipe's mysteries. They realised, for example, when the inclusion of soapwort, a perennial plant sometimes used as a mild soap, was a mistranslation: adding this ingredient in any measure made the resulting dish bitter, frothy and unpalatable. Similarly, levels of seasonings have a threshold: there is an amount of salt in any dish, whether 4,000 years ago or today, that will render it inedible, they said.

Modern eaters might recognise elements of several cultures' comfort foods in these Mesopotamian meals. Tuh'u, for instance, uses red beetroots and shares similarities with both the borscht prevalent in Ashkenazi cuisine, as well as a stew prevalent among Iraqi Jews called Kofta Shawandar Hamudh (meatballs with sweet and sour beetroots), according to Nasrallah. The lamb stew, likewise, calls for meat sautéed in sheep-tail's fat. A close cousin to the stew might be Iraqi pacha, a dish Nasrallah remembers her mother cooking that uses all the parts of the sheep, preparing the carcass in similar ways as are described in the tablets.

"I was really surprised to find that what is a staple in Iraq today, which is a stew, is also a staple from ancient times, because in Iraq today, that is our daily meal: stew and rice with a bread," Nasrallah said. "It is really fascinating to see how such a simple dish, with all its infinite variety, has survived from ancient times to present, and in those Babylonian recipes, I see not even the beginnings; they already had reached sophisticated levels in cooking those dishes. So who knows how much earlier they began?"

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VANILLA IN THE MIDDLE BRONZE AGE: NEW FINDINGS FROM MEGIDDO, BY MELISSA S. CRADIC AND VANESSA LINARES

What kinds of flavors and scents were available to inhabitants of the Levant in the second millennium BCE? Well-documented ingredients from the region come to mind—for example, cinnamon and honey; herbs such as lavender, myrtle, and sage; and resins such as terebinth, pine, cedar, and frankincense. But what about something more exotic? The recent finding of vanilla residues in three Middle Bronze Age ceramic juglets using organic residue analysis takes the idea of exotic to a whole new level.

The juglets were excavated from an intramural tomb at the site of Tel Megiddo, a major urban center in the southern Levant.

Excavated in 2016, the tomb dates to ca. 1650-1550 BCE and contained seventeen individuals and their grave goods. The elaborate burial assemblage included precious materials, such as gold, silver, and bronze jewelry, and a well-preserved corpus of ceramic vessels.

The identified residues of vanillin, 4-hydroxybenzaldehyde and acetonvanillone, are fragrance and flavor components of natural vanilla extract. Vanilla derives from the vanilla orchid, a plant that is endemic to tropical regions in the Americas, Asia, and Africa.

The vanillin and related chemical signatures showed up in clearly identifiable patterns, not trace amounts, possibly due to vanilla's properties as an antiseptic and preservative. Sampling of the vessels drilled below the surface in order to reach residues that had soaked into the porous ceramic fabric of the vessel, a strategy that also eliminated the possibility of contamination from modern sources in the field or lab.

This unprecedented discovery reveals that Bronze Age peoples in the Levant utilized vanilla, a substance that has never before been documented in the ancient Near East. The presence of this far-flung material sheds new light on long-distance trade, lived experiences, and cultural meanings assigned to this flavor and scent ingredient in the ancient Near East. The results also reveal vanilla's unexpected role as a mortuary material in the Middle Bronze Age (ca. 2000-1550 BCE), a period in which mourners carried out elaborate sequences of funerary rituals involving food, drink, bodily adornments, and anointing of the dead.

The presence of vanilla compounds in three separate juglets is compelling evidence for the use of vanilla in an elite Bronze Age mortuary context. But how did vanilla function? It may have been used as a flavor component for a funerary feast, as a perfume for the corpse, or as a scented oil offering for the dead, among other possibilities. In terms of edible deposits, finds related to the consumption of food and drink found within the tomb included serving vessels, faunal bones, and plant remains. These materials indicate that

certain aromas and flavors featured as important aspects of Middle Bronze Age funerary rituals.

Beyond the possible consumption of vanilla-flavored food, vanilla may have been infused in oil used to perfume and/or preserve corpses before burial. The positions of the skeletons indicate that several individuals had been placed carefully inside the tomb and delicately adorned with precious metal jewelry.

The bodies may have been wrapped with shrouds and anointed with aromatic and medicinal oils. Such anointing practices have been documented at a second millennium BCE burial site, the Royal Hypogeum at Qatna in northwest Syria. Whether used as food, scent, or preservative oil, vanilla served a significant purpose within the broader funerary sequence as part of a feast, as an offering to the dead, or to prepare the corpses for burial.

Looking more broadly, these unusual results also expand our understanding of long-distance trade networks in the second millennium BCE. Where did the vanilla originate, and how did it end up at Megiddo? Vanilla orchids grow in tropical regions in Asia and Africa, and both are viable origins for the Megiddo finds. Contemporary textual sources and archaeological evidence attest to trade between large urban centers in Mesopotamia with distant places including Dilmun, the Indus Valley, and Afghanistan.

Links between the Levant with sub-Saharan Africa may have been routed through Egypt, which traded with the “Land of Punt” in east Africa.
This area served as a source of gold and other exotic materials such as aromatic resins, ebony, ivory, and wild animals. Materials from the Indian subcontinent may also have reached the Levant through established trade networks via Mesopotamia or even Egypt. For example, trade between Egypt and the Indian subcontinent for specialized funerary materials can be traced through peppercorns that were used in the mummification of Ramesses II in the 13th century BCE.

This novel discovery of vanilla in the Middle Bronze Age Levant changes the picture of what we now about funerary practices and expands knowledge of international trade networks with tropical regions in Africa and Asia.

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Vanessa Linares is a doctoral student at Tel Aviv University.

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Please visit the site: http://www.asor.org/anetoday/2020/01/Vanilla-in-the-Middle-Bronze-Age

THE ALPHABET: THE FIRST THOUSAND YEARS, BY AARON KOLLER

We take the alphabet for granted: a modern, crisp, efficient way of writing. Each sound has a sign, and each sign has a sound. But where did the alphabet come from, and is it in fact "better" than other writing systems?

There are certainly older writing systems: while cuneiform and hieroglyphs continue to vie for the title of the oldest (a title that rightfully belongs to cuneiform, by the way), they both predate the alphabet by far more than a thousand years.

Not until the early second millennium BCE, somewhere in the vicinity of Egypt, Sinai, or the maybe Byblos, farther north in the Levant, was the alphabet invented. These locations are the leading candidates because of three things we know about the first alphabetic writing:

1. At least some of the first letters were inspired by Egyptian signs, mostly hieroglyphs. For example, the drawing of a human head that serves as resh is clearly taken from the Egyptian tp hieroglyph; the sign for heh was borrowed from the hieroglyph of a man with two raised arms (A28); and so on.

2. Some of the principles of early alphabetic writing seem to have been inspired by Egyptian practices. For example, Egyptian scripts do not show vowels, unlike cuneiform. The early alphabet, too, omits vowels. It seems likely that this counter-intuitive idea to organize the writing system may have been inspired by Egyptian writing.

3. Most obviously, the early alphabetic texts are found either in Egypt or in regions with intensive Egyptian presence. Within Egypt, the inscriptions thought to be the earliest of all were found in Wadi el-Hol, within the great Qina bend of the Nile, 20 miles northwest of Luxor, about 20 years ago.

In Sinai, the largest corpus of early alphabetic texts was found at Serabit el-Khadim in southern Sinai, an Egyptian mining town.

Sinai 345, a small sphinx from Serabit el-Khadim. Note the hieroglyphs on the right flank of the sphinx, and the alphabetic writing along the base.

Although no early alphabetic texts were found at Byblos, the site has been suggested as a candidate for the place of invention. There was a vibrant scribal culture there, and plenty of Egyptian contact and influence, arguably stretching back to the fourth millennium BCE.

By the end of the second millennium BCE, the alphabet had spread from the Egyptian and Sinai deserts not only to the rest of the Levant, including the city of Ugarit, 100 miles north of Byblos on the Mediterranean coast, but also to Mesopotamia, 800 miles to the east, and even to Yemen, 1300 miles to the southeast, straight through the Arabian desert.

One of the more striking alphabetic texts, however, comes from Egypt itself, in fact, from Thebes, less than 20 miles from Wadi el-Hol.
This brief 13-line text, on a limestone flake, fascinatingly combines Egyptian and alphabetic writing.

The hieratic reads, hɜw hn, plausibly a writing of hy hnw "to rejoice," and this is followed by the sign of a rejoicing man, the sign for /h/ in the earliest alphabetic texts. It is not clear whether it represents a man saying 'hey!' or the verb hll 'to praise', but it clearly fits the content of the hieratic line quite well. The text then continues in the same manner, offering on each line an Egyptian word followed by an early alphabetic sign that is appropriate to the content.

Although geographically Thebes is quite close to Wadi el-Hol, this text is worlds away from the nearby graffiti in social meaning. Those were scratched into a rock in a remote part of the desert; this is a learned exercise composed by someone proficient in the official scribal repertoire and creatively experimenting with the interplay of the two writing systems at his disposal. The scribe, proficient in hieratic, was playing with this new alphabetic toy on the side. This is also a dead end: this is the first and last time that we see a professional Egyptian scribe experimenting with the alphabet alongside the Egyptian writing.

When we move out of Egypt, we find that each of these cultures utilized and modified the alphabet in different ways. In Ugarit, the cosmopolitan scribes wrote in numerous languages, and corresponded with courts and administrations around the world, including Egypt. But while their writing ranged across eight languages and their correspondents spanned thousands of miles, all their writing was in the same medium: stylus on clay, to create the little wedges we call cuneiform.

Any script can in principle be used for any language, and the scribes of Ugarit wrote Akkadian, Hurrian, and other languages – all in cuneiform. At some point, they also invented a cuneiform form of the alphabet. They retained, to the extent possible, the basic shapes of the letters, "wedgified" to the extent that one can no longer see the ox underlying the shape of the Ugaritic aleph, the house underlying the bet, and so on.

Still, the relationship is clear in looking at some of the letters:
Most interestingly, the Ugaritic scribes give us the first evidence for alphabetical order. So while we do not know who put the alphabet in alphabetical order, we do know that it happened before the year 1300 or so. This is clear because the Ugaritic scribes added three letters to the alphabet – two additional alephs and another letter something like a śin. But they added them at the end, after the letter taw. Clearly, the alphabet already was in alphabetical order.

It is worth noticing who was using this alphabet: the professional scribes. In other words, the alphabet did not bring literacy to the masses in ancient Ugarit. It was the hyper-educated scribal class, already reading and writing multiple languages, who turned to the alphabet. The scribes linked scripts to languages – using the alphabet for Ugaritic and Mesopotamian cuneiform for Akkadian, never spelling out Akkadian words in alphabetic script or transcribing Ugaritic in Mesopotamian cueniform (which would have been a great boon to our knowledge of Ugaritic, because Mesopotamian cuneiform shows vowels!).

They also sharply divided between the uses of their scripts and languages, using alphabetic Ugaritic for Ugaritic literature, and traditional cuneiform Akkadian for international correspondence and other texts. Non-scribes were left out of all of this: those who were not able to write other scripts never learned the new alphabetic one, either.

Something similar, if more intriguing, is seen in a small batch of cuneiform texts from southern Mesopotamia, from the First Sealand Dynasty, a little-understood kingdom that lasted for more than 250 years years in the vicinity of modern Nasiriyah. In recent years, looted cuneiform tablets from the region, now in private collections, have been published, and these are vastly improving our understanding of the history of the Sealand Dynasty. Intriguingly, a handful of these tablets have dockets in alphabetic script on their edges.

The practice of writing such dockets is known from various times and places in the ancient Near East. It is an intuitive practice: a cuneiform tablet would be stored in an archive, lying on its side, and if a person comes to check on the exact details of a real estate transaction, for example, the bureaucrat does not want to have to take down and read dozens of tablets to find the right one. Much easier is to write a label on the edge that faces out from the shelf, identifying the tablet as, say, the deed of sale of Sam's house to Alex.

What makes these dockets fascinating is that they show us that not only had the alphabet reached southern Mesopotamia by the middle of the millennium, but also that it was in the hand of the scribes – the same scribes writing contracts in cuneiform were labeling them with the alphabetic dockets. Presumably the dockets were in alphabetic script for the most obvious of reasons: it's just simpler to write than cuneiform.

Even so, it is not really surprising that the scribes did not switch over to alphabetic writing entirely – although it may have made their jobs easier. Scribes (and their parents) had invested years in their own professional training, and the idea of suddenly undercutting their own status by reforming the profession to make the bar for entry significantly lower – no matter how sensible the reforms may be – is not one that scribes would naturally rally around. (Those of us in academia, or other similar professions, may be able to relate to this.)

Furthermore, the scripts of the great civilization were by now endowed not only with political power, but with cultural significance. One can no more expect that the Egyptians would drop hieroglyphs in favor of the alphabet as one can expect the Chinese to switch to an alphabetic system today. Writing systems convey personal and cultural identity, as numerous modern examples attest, as well (Turkey, Russia, Israel, etc.), and these are not easily altered. It is no accident that the alphabet did take off in cultures on the margins of the great civilizations, such as Phoenicia, Aram, Israel, and, as we will now see, Yemen.

The case of Yemen is one of the most intriguing examples of the spread of the alphabet. Ancient Yemenite writing has been known for centuries, but the chronology of that writing has long been mysterious, since our knowledge of the political history of the region is sketchy at best. What was known was that the alphabet was in a different "alphabetical order" than the one used to the northwest: H L Ḥ M Q W Ś R B T Š K N H Ṣ S F ʔ ʕ Ḍ G D Ḡ Ṭ Z D Y T Ẓ. (This is often called the "halḥam order" for short.) This

order is known from some Late Bronze Age texts in the Levant, as well, but when did this alphabet arrive in Yemen, and from where?

Great advances have been made in recent years, especially because of the work of Peter Stein and Christian Robin. The writing is of two types, monumental writing on stone, and quotidian writing on wooden sticks.

The writing on wooden sticks was deciphered primarily by Stein, and the organic material (preserved in the desert of the Arabian peninsula) allows the texts to be dated with some precision.
Radiocarbon dates for some of the sticks revealed that some came from the 11th century BCE!

Earlier scholars such as Ernst Axel Knauf and Kenneth Kitchen had already speculated that there were ties between the Levant and South Arabia as early as the Late Bronze Age, in part because after that the halḥam order of the alphabet does not exist in the Levant. That now seems to be confirmed by the early alphabetic writing on wood.

In sum, the alphabet spread steadily through the Near East over the course of the first millennium of its existence. A millennium, though, is a long time, and at the same time, it is striking how shallow the impact of the alphabet was over the course of these centuries. It may have been found in Mesopotamia, but only on dockets; in Ugarit, it served only for local literature; in Egypt, despite that being the site of some of the earliest inscriptions, in graffiti and in the hands of professional scribes, it made hardly any impact at all.

We have to again think of the scribes, in whose hands the alphabet traveled. While the utility of the system made it attractive, the cultural power of the traditional writing systems prevented its diffusion among the active scribal classes. In the first millennium – which is a different story altogether – the alphabet spread to cultures without earlier literary traditions. The Phoenicians and Arameans began to write, and soon the alphabet spread to the Aegean, where it spurred the Greeks to emerge from centuries of illiteracy. Then it reached Italy in the hands of the Etruscans, and Europe was never the same.

While it cannot be said that the alphabet is mystical, and it cannot really be said that it is magical, the technology and the idea of the alphabet did sweep across the world, traveling many hundreds of miles east and west, both testifying to the power of simple ideas to spread and aiding in the dissemination of further ideas and even texts. And that is worth celebrating.

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Please visit the site: http://www.asor.org/anetoday/2020/01/Alphabet-The-First-Thousand-Years [Go there for better format and necessary pix, maps]

HOW DID HUMANS BOIL WATER BEFORE THE INVENTION OF POTS?
BY SARAH ZHANG

Roasting would have been easy. But re-creating the paleo way of boiling water requires a bit more imagination.

On a blustery day in October, Andrew Langley and 13 other graduate students headed to the woods to learn to boil water. They were allowed no obvious cooking vessels: no pots, no pans, no bowls, no cups, no containers at all. But they did bring deer hides, which Langley had carefully procured from deer farms. They were to boil water the Paleolithic way.

Langley is a doctoral student in archaeology at the University of York, and he studies how prehistoric humans cooked without pottery.
Ceramics are a relatively recent invention in the long arc of human history. Pottery shards appear in the archaeological record only 20,000 years ago, first in China and then many millennia later in the Near East and Europe. Metal cookware is an even more recent innovation. For tens or even hundreds of thousands of years before all this, our ancestors were building fires and using heat to make food tastier, safer, and easier to digest. The invention of cooking, anthropologists have argued, helped make humans human.

It's easy to imagine how prehistoric people could have roasted their food. It's much harder to imagine how they could have boiled it without pottery. But that's what Langley, who was helping lead a class of master's students in archaeology, set out to attempt that October morning. Their boiling experiment was part of a course, and it took place at the York Experimental Archaeological Research Centre, a lakeside grove where researchers try to re-create the prehistoric by hafting arrowheads and weaving baskets out of reeds—and, in this case, boiling water. The students divided into groups of two or three, and they set out on this extremely simple yet daunting task.

A couple of groups dug pits, filling them with coals and then lining them with either wet clay or a deer hide. Others poured water into birch bark or pig stomachs (procured from a Chinese supermarket). One group hung a deer hide from a tree and started heating small rocks in a fire—a technique inspired by the discovery of fire-cracked rocks in Paleolithic sites. These rocks had split and changed in distinct ways that suggested repeated heating and cooling. Archaeologists think that these stones were heated in fires and then dropped into water for cooking.

But you can't use just any old rocks for boiling. "The stones are the most tricky part," Langley says. Wet stones, such as those that have been sitting in a river bed, will explode when the water inside turns into steam. So will stones with air trapped inside them. "Things like granite and basalt are very good," he says. For safety reasons, Langley provided the students were provided with massage stones that he knew would not explode. Still, the students had to heat the stones gradually to make sure that they did not crack at all. They ended up slowly nudging the stones into the fire over the course of 10

to 15 minutes. Using multiple stones, they were able to get the water inside the deer hide to boil.

Another group was also attempting to boil water inside a deer hide hung directly over a fire—a technique admittedly less grounded in physical evidence from archaeological sites. In 2015, John Speth, a retired anthropologist at the University of Michigan, wrote a paper pointing out that you can actually boil water in a plastic water bottle. The paper, he was happy to explain to me, was inspired by watching the reality show Survivorman, in which the outdoor expert Les Stroud boils water in a plastic bottle, with his son. Speth quickly found YouTube videos and other evidence of people heating water in paper cups, coconut shells, bamboo tubes, wooden bowls, and even leaves. It turns out that as long as the cooking container is filled with water, it does not get hot enough to ignite.

But when Speth began talking with other archaeologists about this, he found that they had rarely thought about Paleolithic humans boiling water this way, using seemingly flimsy and flammable containers long before the introduction of pottery. However, ethnographers in the 19th and 20 centuries documented the Celts, Assiniboin, Cree, Ojibwa, and Blackfeet cooking without stones in birch bark, hides, and animal stomachs. These organic materials would have rotted, of course, leaving no artifacts for archaeologists to study. Speth wondered if humans could have boiled liquids this way long before the evidence showed up in the archaeological record.

One group of students decided to put this method to the test. They hoisted their water-filled deer hide directly over a fire, and they planned to let it go as long as the hide stayed intact. The hair on the outside singed, but the skin itself held up just fine. So the students waited and waited and waited. Four hours later, the hide was still intact. It did get very hard, but neither sprung a leak nor burned.

The water reached 60 degrees Celsius, or 140 degrees Fahrenheit, but it did not come to a boil. And the deer hide definitely added some extra flavor, if you will, to the water. “If you stuck your head over it while it was cooking, you could smell it,” says Christopher Lance, one of the students. They were, I was disappointed to learn, not allowed to drink the hide-boiled water for food-safety reasons.

The students are now writing up the results of their different pot-less boiling techniques. And Speth was incredibly pleased to hear that a group of students decided to put his idea of wet cooking without hot stones to the test. It’s extremely speculative, he admitted. But archaeology always has to deal with the problem of an incomplete record, and certain types of evidence (i.e., anything that will rot) are always going to be more incomplete than others. It’s about considering the things we see and also the things we don’t see.
“If nobody asked the question,” Speth said, “nobody would even think it’s worth thinking about.”

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SARAH ZHANG is a staff writer at The Atlantic.

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Please visit the site: https://www.theatlantic.com/science/archive/2020/01/how-did-humans-cook-before-the-invention-of-pots/605008/

AN EMPYREAN WHISPER: THE FATE OF THE MYSTERIOUS MINOANS, BY PHIL BUTLER

At dawn on a day sometime before or after 1600 BC, humanity's closest link to Utopia fell from the grace of the gods. That morning a Minoan priestess held her arms outstretched to the blackened skies over Keftiu, as her people prayed fervently at her feet. As soot and ash fell on that lush Eden and lined the edges of magnificent temples, not one among them foresaw the gods' betrayal to come. The fate of the Minoans was sealed on that day.

Today, science and fantasy swirl around the puzzle that was the Bronze Age's brightest glimmering idea. Blessed from the heavens, the Crete of four thousand years ago must have been unsurpassed in riches, glory, and harmony. Protected by what was certainly the most powerful fleet in ancient times, the thalassocracy of the Minoans had no real enemy, no real equal. On some days I can see them walking in shadow here, dressed in their colorful garments, ghosts of Atlantis, if you will.

I also imagine what they must have felt when a disaster of unbelievable magnitude fell upon them. Science only reveals distant echoes of a volcanic event ten times more destructive than Krakatoa, the second most explosive event in the last million years. A deeply religious people, the Minoans must have been a society of walking dead, both physically and spiritually, when the earth mother finally shunned them.

There is still much speculation as to the decline and fall of the so-called Minoan Empire. Some theorists claim the monstrous Thera volcanic event wiped these mysterious people from the face of the Earth. Other scientists tell us the Thera event was only the beginning of the end of the once great sea power. Science has yet to fully reveal the scope of the eruption and its aftermath, but if one tunes in to Crete's spirit, it's hot hard to imagine an Apocolypse.

Imagine a society, probably ruled over by a priestess cult, where the men sailed the great sea in thousands of ships. The division of responsibility a more perfect one, and easily envisioned from the archaeological evidence at hand. The way Utopia ended? This can be felt until my wonderful scientific colleagues prove it.

Atlantis? A brilliant archaeologist working here on Crete advises me, "Stay away from Atlantis speculation, Phil." I cannot, however.
Especially when the study of Minoan shipbuilding with composit materials, an art lost for almost three thousand years. And when I look on their ceramic art in all its ingenuity, or the unique architecture, or advance metallurgy that cannot even be reproduced today, their show of technical superiority was centuries ahead of all others in the Bronze Age. One visit to the Heraklion Archaeological Museum has dazzled each and every friend visiting us on the island. If you go there, with the right mindset, you will experience what they did.

I can imagine how waves of tsunamis hit Crete, caving in seaside villas, drowning a hundred thousand men at once, bashing to splinters the world's greatest fleets, and leaving a defenseless society led by priestesses at the mercy of warlike peoples. The mysterious burning of the temple/palaces seems like no mystery for me. The sacred stores of crops and trade goods rapidly depleted under nuclear winter, faith in ritual and God starved in the empty bellies of the Cretans. The screams of slaughtered temple elites resonate with those murdered by the Ottomans and other invaders – we are all human, in or out of Eden.
An excerpt from our friends at Cretan Beaches illustrates the Minoan dependency on their navy:

"The Minoan fleet, the strongest of its era, as evidenced by several findings in the Mediterranean, brought wealth to Crete from the trade of the famous Cretan cypress and agricultural products. Built-in large yards, such as the shipyard of Saint Theodori at Vathianos Kambos, ships were loaded with timber, honey, wine, pottery and olive oil from the ports of Dia, Katsambas, Komos, Zakros, Psira, Mochlos, Niros, Petras, sailing towards all directions of the Mediterranean as far as Scandinavia."

Think about it. The Minoans were involved in the tin trade, critical in the Bronze Age. Tin. Imagine rate and critical cargoes reaching every port from Knossos to the Baltic Sea! What would precious saffron harvested from a type of crocus off Crete be worth, let alone advanced ceramics, copper, gold, or even weapons made from the best metallurgists in the world? In these regards, our Minoans had no equals for hundreds and hundreds of years. You may liken them to the British Empire, only without conquest and war on their minds. And their utter destruction would have impacted the whole world.

What sort of catastrophe was this Thera eruption? So far scientists have traced its telltale footprints around the globe. The tsunami and pumice evidence are found in Israel, Egypt, and Turkey, and cores from North America attest to clouds of volcanic dust spread worldwide. The Tempest Stele, which was erected by Pharaoh Ahmose I early in the 18th Dynasty of Egypt, c. 1550 BCE hints at a cataclysm of unspeakable force. The fragments of taken from 3rd Pylon of the temple of Karnak at Thebes speak of "pyramids collapsing – and all that existed having been annihilated." Thought to be an eyewitness account of the Thera event, this speaks of the "gods expressing themselves" and of their discontent.

Archaeologists have so far isolated very little evidence of tsunami-related destruction on Crete, but I feel that this is only because funding and focus have been missing. New research from a multidisciplinary group comprised of archaeologists, volcanologists, and other experts should create a wider window. Until then, we should examine the best and worst-case scenarios for the Thera destruction.

It's my belief that this unique event literally washed away most of what was truly Minoan. What remains, I think, are the remnants of stone, ceramic, and metal, along with some flakes of dies and paint, from a place far richer than we imagine. Still, we are left with more speculation, but new evidence suggests the Minoan eruption may have caused a widespread disrupt to Babylonia and beyond, and probably sealed the fate of the Minoans.

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Please visit the site: https://www.argophilia.com/news/fate-of-the-minoans/224876/ [Go there for pix]

BRAINS TURNED TO GLASS? SUFFOCATED IN BOATHOUSES? VESUVIUS VICTIMS GET NEW LOOK TWO STUDIES EXAMINED GRIM SCENES LEFT AT A ROMAN SETTLEMENT DEVASTATED BY THE 79 A.D. ERUPTION, BY JENNIFER PINKOWSKI

The infants and children huddled in the stone boathouses. The women pressed in next to them. The men crowded in last. They'd all fled Herculaneum on August 24, 79 A.D. as Mount Vesuvius rained destruction on the city, as it did Pompeii and other Roman settlements near the Bay of Naples.

While Pompeii was consumed by ash, Herculaneum was done in by a pyroclastic flow — a fast-moving, dense, extremely hot surge of ash, gas and rock. At the city's seaside, hundreds of people died that day.

The remains of 340 of them have been unearthed since 1980 — some in the boathouses, known as fornici, and some on the beach.

How they died has long been debated. A prevailing hypothesis is that their blood and brains were vaporized by the extreme heat of the pyroclastic flow. At another site in the city, some researchers have proposed that at least one person's brain turned to glass.

A pair of studies published Thursday offer new evidence for how the Vesuvius eruption killed some of Herculaneum's people. One in the journal Antiquity challenges the vaporization hypothesis. The researchers who published it say the condition of the bones of the people in the fornici suggest they were protected from instant death by both the stone structure around them and their collective body tissue mass. This protection insulated them from the flow's intense heat, but they may have suffered more as they were perhaps suffocated or asphyxiated.

"The results that came back were slightly surprising," said Tim Thompson, a professor of applied biological anthropology at Teesside University in England and a co-author of that study. "That kind of forced us to rethink the accepted theory about how these individuals died."

Another team's results in the New England Journal of Medicine made the claim that the pyroclastic flow's heat vitrified the brain of at least one victim, transforming it into glass that was preserved for centuries.

The researchers of the first study looked at the ribs of 152 individuals found in six of the 12 boathouses. Adult women, infants and children outnumbered men by about two to one.

They focused on crystal microstructures in the bones, which change in response to thermal exposure, and the amount of remaining collagen.

They separated the collagen from the bone, gelatinized it, dried it and weighed it. They then ground up the bone samples and fired infrared wavelengths into samples. The absorption or reflection of those wavelengths reveals both bone composition and changes in response to burning and heating.

The data showed that people in the boathouse were exposed to temperatures of about 500 degrees Fahrenheit — far from the maximum temperatures pyroclastic flows can reach.

Dr. Thompson believes there are two reasons for the results. One is that the stone boathouses protected people from the direct fire and heat of the flow.

“It’s almost like a little oven, so it distributes heat differently,” he said.

The number of people in each fornici may also have had an effect.
Their combined soft tissues may have acted like a buffer against the heat. In this sense, they protected one another with their bodies.

But it may have also prolonged their agony. As the pyroclastic flow blasted the beach, debris would have piled up at the boathouse exits, trapping dust, gases and people within.

“I do think — and this is speculation — that they likely suffocated rather than died of the heat,” Dr. Thompson said.

The rising heat then baked, and preserved, their remains.

The vitrified remains of what some researchers say are a victim’s brain found at Herculaneum.Credit...Herculaneum press office, via Associated Press

“The authors make a convincing case for rethinking the temperatures that these victims of Vesuvius were subjected to,” said Kristina Killgrove, a bioarchaeologist at the University of North Carolina, Chapel Hill, who has studied skeletal remains at Oplontis, another Vesuvius-doomed settlement.

The second study examined a man found in the Collegium Augustalium, a building on the main street of Herculaneum, some distance from the seaside. His brain, said Pier Paolo Petrone, a forensic anthropologist at the University Federico II of Naples and an author of the study, turned to glass as a result of the high heat from the pyroclastic flow, and the victim’s skull exploded.

Dr. Thompson said the difference between his victims in the seaside and Dr. Petrone’s main street fatality might be explained by their distinctive shelters.

“Our individuals were in these kind of sealed, trapped stone oven-type things, whereas his individual was in a regular building — much more exposed and much more directly affected by the pyroclastic flow itself,” he said.

Dr. Petrone, who published a study in 2018 supporting the hypothesis that the boathouse victims' brains were vaporized, was not persuaded by Dr. Thompson's conclusion.

"The methodology is itself interesting, but the weak point of the work is that they did not sufficiently consider the whole set of taphonomic, bioanthropological and forensic evidence detected on the victims' corpses and bones," he said.

Dr. Thompson said the condition of the bones reflected events at the time of death, not the taphonomy, or changes that can affect remains post-mortem such as decomposition, scavenging or fossilization.

Dr. Killgrove was skeptical about Dr. Petrone's finding.

"While their analysis is intriguing, I do not think they have proved it is human brain material, nor have they ruled out other origins,"
she said. "The fatty acids they identified are typical of vegetable or animal fat or hair."

Dr. Thompson added that the results from the two studies don't necessarily contradict each other. "Both of these situations can happen at the same site, because it's a very complex scenario."

As research continues at the Vesuvius sites, Dr. Killgrove said Dr. Thompson's study should inspire researchers to revisit the remains of other victims of the eruptions.

Some of the skeletons she studied at Oplontis, for example, have "high-quality collagen yields" similar to those in the Herculaneum boathouses, she said, suggesting heat-related changes to the bones were minimal: "This new work shows that researchers should renew their investigations into the causes and manner of death at Oplontis, Pompeii and other Vesuvian-area sites."

Please visit the site: https://www.nytimes.com/2020/01/23/science/vesuvius-eruption-brains-glass.html

A 3,000-YEAR-OLD EGYPTIAN MUMMY SPEAKS AGAIN, WITH SOME HIGH-TECH HELP, BY BEN GUARINO

Using a model of a 3,000-year-old mummy's vocal tract, researchers have approximated the voice of a long-dead Egyptian priest. They were able to create a single burst of sound, a vowel-like bleat between the "e" in "bed" and the "a" in "bad."

The study published Thursday in the journal Scientific Reports is the sort of science that at first seems to beg for the B-movie treatment ("The Mummy Croaks Again!"). But there is more-serious motivation involved, as well as more respect for the deceased person wrapped in burial cloth.

The study authors said that the priest, named Nesyamun, would be pleased with this postmortem re-creation of his voice. "It is the fulfillment of his belief" to have his voice heard in the afterlife, said study author John Schofield, an archaeologist at the University of York in England.

Nesyamun worked as a scribe at the temple of Karnak in Thebes. His voice would have been critical in his priestly duties as he spoke, chanted and sang. Nesyamun was mummified and entombed in a coffin inscribed with hieroglyphs, mainly texts from the Book of the Dead.

Since 1823, his body has been kept at Leeds City Museum, where his body was unwrapped. Scholars, surgeons and chemists have examined him in the many years since, probing the mummy by microscope, endoscope and X-ray. A "multidisciplinary scientific investigation" of Nesyamun, published in 1828, "was the first of its kind in the world," Schofield said.

In the new work, scientists made precise measurements of Nesyamun's well-preserved vocal tract, using a CT scanner at Leeds General Infirmary. From this scan, they printed a 3-D copy of his throat and hooked it up to a loudspeaker. They fed an electronic signal (a simulation of "a human larynx acoustic output," said study author David Howard) through the faux organ to produce the voice.

The single sound represents a proof-of-concept work, said Howard, who studies human speech and singing at Royal Holloway, part of the University of London. "To produce other vowels would require changes to the shape of the vocal tract," Howard said. That is their next step, with the eventual goal of producing words, singing and even speech.

Vocal tracts are biologically unique, said Daniel Bodony, an aeroacoustics expert at the University of Illinois who was not a part of the research team.

The study's authors captured Nesyamun's from his lips back down to the trachea. But the vocal tract is only half of what makes "the human being sound like the human being," Bodony said. The other half flutters at the base of the tract: the vocal folds, also known as cords or reeds. Human vocal folds vibrate at multiple frequencies, yielding "richness and

emotion," and the sound the vibration produces is further distorted by traveling through the tract. An electronic substitute for fleshy vibration is why this re-creation "sounds tinny," Bodony said.

Bart de Boer, who studies the evolution of speech at Vrije University in Brussels, said that "I do think the sound is an accurate re-creation of a sound Nesyamun could have made." Simple, fixed utterances of aah-like sounds do not require the movement of tongues or teeth. But, de Boer said, "we also do not really know whether [this vowel noise] was a sound that was actually used in his language."

The study authors anticipate this re-creation, and future expansions of Nesyamun's voice, will be a hit with Leeds's audience of museum-goers. "When visitors encounter the past, it is usually a visual encounter. With this voice we can change that," Schofield said. "There is nothing more personal than someone's voice."

The dimensions of Nesyamun's tract, smaller than a modern adult man's, suggest he might have been a tenor. If so, the priest would have been a welcome addition to singers Howard directs. "We need them in my choir!" Howard said — meaning tenors, not mummies.

Please visit the site: https://www.washingtonpost.com/science/2020/01/23/3000-year-old-egyptian-mummy-speaks-again-with-some-high-tech-help/ [Go there for pix and voiced vowels] [See also https://www.theguardian.com/science/2020/jan/23/talk-like-an-egyptian-mummys-voice-heard-3000-years-after-death]

ON THE TRAIL OF PURPLE

As part of a DFG-funded project, a German-Tunisian team co-directed by LMU archaeologist Stefan Ritter has surveyed the ancient city of Meninx on the island of Jerba and reconstructed its trading links in antiquity.

The port of Meninx was unusually situated and well protected. Incoming ships first had to negotiate a deep and broad submarine channel in the otherwise shallow bay, before approaching the city itself via another channel that ran parallel to the coast for much of its length. They then had to traverse a wide stretch of shallow water to reach the city's wooden and stone quays, which extended seawards from the strand. From these piers, stevedores could readily unload cargoes and transport them to the nearby warehouses. We know all of this thanks to the work of LMU archaeologist Stefan Ritter and his team, which has allowed them to reconstruct the port facilities of Meninx on the island of Jerba off the coast of North Africa. The city was an important trading center in the time of the Roman Empire, and had commercial links with many other regions throughout the Mediterranean.

In the course of a DFG-funded project that lasted up until the end of 2019, Ritter, together with his colleague Sami Ben Tahar (Institut National du Patrimoine, Tunis) and a joint German-Tunisian team, has surveyed and explored the remains of Meninx and its port facilities.

With the aid of magnetometer surveys, the researchers were able to map the highly unusual layout of the city, whose main streets ran parallel to the coastline. In addition, on the basis of their mapping data, they carried out exploratory excavations on selected temples and shrines, as well as commercial and residential buildings. "We even discovered a well preserved private bathhouse, which dates from the Roman imperial period and included mosaic floors, splendid wall paintings and a range of statuary," Ritter explains.

Based on their findings, Ritter and his collaborators believe that the city's prosperity rested in large part on a single commodity – the purple dye, which was obtained from the sea snail Murex trunculus. "We have good reasons to believe that the purple dye from Meninx was not exported as such, but was used locally to dye textiles, which were then sold further afield," says Ritter. The material, which was highly valued, was apparently exported all around the Mediterranean littoral and beyond. In exchange, the inhabitants of Meninx imported foodstuffs, wine, fine domestic pottery and marble sourced from Italy, Spain, Greece, Asia Minor and Egypt.

The settlement was founded in the 4th century BCE, when the Carthaginians were still the dominant force in the area. It reached its zenith during the period between the 1st and 3rd centuries AD, when Imperial Rome was at the height of its power and Meninx possessed its own theater and was adorned with other imposing urban structures.

Owing to its location on the shores of a shallow bay, it was relatively well protected from attack. However, the harbor itself was accessible only via submarine channels that could be navigated only with the help of local pilots, says Ritter. The underwater investigations, which were carried out by the Bavarian Society for Underwater

Archaeology, not only uncovered traces of the original harbor facilities and the tricky passage to the docks, they also brought to light a number of wrecks and the remains of piers. Together with their Tunisian colleagues, the LMU archaeologists now plan to extend their investigations on Jerba as part of a more comprehensive comparative study of the region's ancient heritage.

Please visit the site:
https://www.en.uni-muenchen.de/news/newsarchiv/2020/ritter_meninx1.html [Go there for pix and figs]

FOSSIL POLLEN AND THE STORY OF OLIVES IN THE MEDITERRANEAN BASIN, BY DAFNA LANGGUT AND RAPHAEL GREENBERG

Olive (Olea europaea L.) was one of the most important fruit trees in the ancient Mediterranean and one of the founder species of horticulture in the Mediterranean Basin. But when and where did olive cultivation begin, how did it spread, and who is to be thanked for the invention of this vital component of Mediterranean diet?

Olives and olive oil

Produced and traded across the Mediterranean over thousands of years, olive oil was both a staple food ingredient and a precious commodity used for cosmetic, medicinal, and ritual purposes as well as for illumination. Olive oil is touted by the World Health Organization as healthy and sustainable, and inscribed by UNESCO as intangible world cultural heritage. Cured olives are common in many Mediterranean cuisines. Today, olive orchards still form a significant component in the agricultural economy of many Mediterranean countries, with Spain, Italy, and Greece accounting for about two-thirds of the total world production of olive oil.

In the wild, olive trees grow in habitats characterized by a typical Mediterranean climate, usually in hilly areas, in evergreen woody vegetation associations.

Geographical distribution of wild olive (Olea europaea subsp. oleaster) and cultivated olive in the Mediterranean Basin (redrawn from Carrión et al., 2010, and Lavee and Zohary, 2011). Numbers represent the sites used in the palynological analyses: (1) Dead Sea;
(2) Sea of Galilee; (3) Lake Hula; (4) Al Jourd; (5) Eski Acigöl; (6) Gölhisar Gölü; (7) Lake Iznik; (8) Lake Voulkaria; (9) Lake Gramousti;
(10) Lago Preola; (11) Gorgo Basso; (12) Albano; (13) Nemi; (14) Accesa (center); (15) Accesa (edge); (16) Lago Padule; (17) San Rafael; (18) Baza; (19) Villaverde; (20) Siles; (21) Laguna Negra;
(22) Saldropo; and (23) Charco da Candieira. The pollen data primarily derive from collaborators as well as the European Pollen Database (EPD, Leydet et al., 2007–2017).

These habitats can be found mainly near the coastal Mediterranean areas of Morocco, Libya, the Levant, Anatolia, and at the southern coasts of Greece, Italy, France, and the Iberian Peninsula. Olive is also native to Mediterranean islands such as Palma, Sardinia, Corsica, Sicily, Crete, Cyprus, and the Aegean Islands.

Conflicting evidence has been offered regarding the geographical origins and timing of olive cultivation. Genetic studies differ regarding the exact area of origin of domestication and whether there was one primary domestication event or several independent ones. The archaeobotanical evidence also allows for varying interpretations: The first modern proposal concerning the date and geographic origin of large-scale olive management, based on archaeobotanical remains and natural distribution, came from Daniel Zohary and Pinhas Spiegel-Roy in 1975, who suggested that the olive tree was

already cultivated (and consequently domesticated) at Chalcolithic Ghassul in the southern Levant, ca. 4,000 years BCE. The northern Levant and some north-western Mediterranean areas were also suggested in the literature as areas where olive cultivation began. The macro-botanical evidence also offers several options regarding the exact timing of the beginning of olive horticulture ranging between late 5th millennium to the 3th millennium BCE.

The genetic evidence and the archaeobotanical data cannot be easily reconciled, probably because of complex secondary domestication processes, with hybridization between local wild, feral, and domesticated genotypes and introduced domesticated olive trees, followed by repeated local selection events. While DNA data can indicate areas of potential genetic contributions to the domesticated gene pool, it lacks information on the timing of such events. We therefore focused on another proxy – the palynological evidence.

Our study used fossil pollen records from around the Mediterranean, correlated with archaeological proxies for olive cultivation and oil-production (such as concentrations of crushed olive pits or the presence of extraction technologies), to shed new light on the history of olive cultivation around the Mediterranean. We employed a fossil pollen dataset composed of high-resolution pollen records obtained across the Mediterranean Basin, covering most of the Holocene. Pollen records that met the criteria of our study were available from Portugal, Spain, Italy, Greece, Turkey, Lebanon, and Israel. The pollen data were provided by the EPD (European Pollen Database) and by palynologists who work across the Mediterranean, who are co-authors of our new study.

Within the new fossil pollen dataset, human activity was indicated when olive pollen percentages rose rapidly, unaccompanied by an increase of other Mediterranean trees with similar environmental requirements, and when the rise occurred in combination with consistent archaeological and archaeobotanical evidence. Based on these criteria, our results showed that primary olive horticulture occurred in the southern Levant, not later than ~4,500 years BCE. The palynological evidence indicated that olive cultivation occurred in the Aegean (Crete) several centuries later, during the early/mid 4th millennium BCE.

It is not yet clear whether olive cultivation in the Aegean can be considered an independent event or as having resulted from knowledge (and possibly plant) transmission from the southern Levant. In any event, this early olive horticulture corresponds to the establishment of the Mediterranean village economy and the completion of the ‘secondary products revolution’ during the Chalcolithic period, rather than to Bronze Age urbanization or state formation. It was primarily a rural staple economic strategy that was only secondarily (and much
later) co-opted by Early Bronze Age elites as an instrument of political-economic leverage.

From the two areas of origin, the southern Levant and the Aegean, olive horticulture spread across the Mediterranean. Based on the pollen dataset used in this study, the beginning of olive cultivation is dated to ~2,800 years BCE in the northern Levant. In Anatolia, large-scale olive horticulture is dated to ~1,200 years BCE and in mainland Italy to ~1,400 years BCE. In the southern sectors of the Iberian Peninsula olive horticulture is evident palynologically only during the last two millennia. The

archaeological record for the Iberian Peninsula supports a slightly earlier date, during the mid/late 1st millennium BCE.

Our study gives us a better understanding regarding the cultivation history of the olive tree across the Mediterranean, underlining its emergence in Levantine rural communities well before the advent of urbanism. It also illustrates the positive potential of basin-wide scientific collaborations, combining regional datasets to provide a broad geographical and temporal perspective on this economically important species and on the conditions of its long-term survival.

The palynologists who contributed to our database were Josè Sebastián Carrión, Rachid Cheddadi, Daniele Colombaroli, Warren John Eastwood, Thomas Litt, Anna Maria Mercuri, Andrea Miebach, Neil Roberts, Henk Woldring, and Jessie Woodbridge.

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

ARCHAEOLOGISTS DOCUMENT 12,000 YEAR OLD INSCRIPTION IN SOUTH SINAI

The archaeological mission of the Ministry of Tourism and Antiquities has finished documenting a colorful antique inscription dating back to about 10,000 years BC found in an archaeological cave located roughly 60km southeast of Serabit al-Khadem, and 30km north of Saint Catherine, as part of a project documenting rock inscriptions in South Sinai.

The Secretary-General of the Supreme Council of Antiquities Mostafa al-Waziry explained that the cave was located in a difficult region called al-Zaranij. The sandstone cave is at a depth of about three meters, 3.5 meters tall, and 22 meters wide, and is the first of its kind to be discovered in South Sinai.

It was found by chance, upon notification from a desert adventurer in South Sinai.

The discovered cave contains many colorful inscriptions, some on the ceiling of the cave and others on the stone blocks falling on the floor of the cave, said the head of the Egyptian Antiquities Sector with the Ministry, Ayman Ashmawy.

He added that the mission also found large quantities of animal remains in the cave, indicating its use as a shelter for the Bedouins and animals from poor weather in the past.

The discovered inscriptions depict many different scenes dating back to various eras, the Director General of the North Sinai Antiquities and head of the archaeological mission working on the cave Hisham Hussein said.

The inscriptions were divided into a number of groups. The first group was drawn on the oldest layer of the ceiling of the cave. It dates back to a period estimated between 5,500 and 10,000 years BC, and is characterized by a dark red color.

Animals depicted include a donkey and mule, characterized by more realistic proportions unlike the rest of the scenes. Five animals and hand prints are depicted on the ceiling at the entrance of the cave dating back to the same era, Hussein added.

The second group likely dates back to the Copper Age and is characterized by scenes of women, he said, in addition to animal scenes while the third and final group dates to the AD era and depicts people with “Howdah” (a bed carried by camels).

Hussein added that the mission will continue surveying the area of Serabit al-Khadem, adding that the archaeological mission started in South Sinai in 2019.

Please visit the site: https://www.egyptindependent.com/archaeologists-document-12-thousand-year-old-inscription-in-south-sinai/ [Go there for pix]

WHO WAS HOMER? BY DAISY DUNN

The Iliad and the Odyssey are two of the world's most famous poems but very little is known about their creator, 'Homer'. Historian and writer Daisy Dunn goes in search of the poet of the Trojan War, exploring who Homer was and whether he ever actually existed.

The Greek hero Odysseus spent 10 long years striving to return home after the Trojan War. The stories of how he tricked the one-eyed Cyclops, evaded the flesh-eating Laestrygonians, and resisted the lure of the sirens as he struggled to reach Ithaca, are some of the most memorable in Homer's Odyssey. These stories may be fictional, but they form the heart of a poem that has reverberated down the centuries as a vessel of eternal truths.

For centuries, people have been trying to discover who was behind the timeless tales of the Odyssey and its predecessor, the Iliad. Homer, the name attached to the two poems, remains a mysterious figure. Was he a man? Was 'Homer' a group or lineage of poets? Was Homer a woman?

The late-19th-century novelist Samuel Butler was convinced that the author of the Odyssey, at least, was female. For most people in antiquity, however, the two epics were the products of a single male mind.

In the second century AD, a satirical writer named Lucian imagined meeting the poet and interrogating him as to who he truly was. 'Homer' revealed to him that many people believed he came from the Aegean island of Chios, or from Smyrna or Colophon, on the west coast of what is now Turkey. While his words were to be taken lightly, scholars today consider it highly probable that the Homeric poems did indeed originate in these parts. Their Greek, while not one that was ever spoken, is overall more typical of the ancient dialects of the west coast of Turkey and the islands just off the coast than it is of those of mainland Greece.

Homer was associated with this part of the world from a very early date. Several writers described a talented poet of Chios, where a group of performing bards calling themselves the 'Homeridae' or 'children of Homer' had also established itself by the 6th century BC. References also exist in the early sources to Homer being conceived on the island of Ios or at Cyme and being born at Smyrna (modern-day Izmir).

Ancient writers had various ideas about what Homer looked like. The word 'Homeros' could mean 'hostage' in Greek, so some imagined that he was a captive. But 'Homeros' could also mean 'blind', and the image of a blind bard proved particularly compelling. One reason for this was that the Odyssey features a blind but immensely talented poet named Demodocus who recites his work before a royal court.

It is possible that the blindness of Homer was a myth invented to account for the fact that the Homeric poems originally evolved orally, before the development of writing in Greece, by being performed and passed down from bard to bard. Like the blind poet Demodocus in the Odyssey, a bard would have sung the poems before an audience,

repeating passages and set phrases, such as 'godlike Odysseus', to satisfy the poetic metre.

The Iliad and Odyssey are conventionally dated to the late 8th or early 7th century BC. By this time the use of writing was becoming more widespread in Greece and it seems that the poems were also set down for the first time. But it's clear that the poems contain features preserved from the pre-writing age.

This Etruscan painting from a tomb shows the Judgement of Paris. At the left, Paris awaits the three goddesses. Aphrodite, last of the three, lifts her dress to show a flash of leg. On the right, Helen is approached by three women bringing jewellery and perfume. About 560-550 BC.

The story of the origins of the Trojan War, for example, in which Paris, prince of Troy, granted Aphrodite, goddess of love, the golden apple, is alluded to only briefly by Homer. It's taken for granted that anyone coming to the poems would already have known the details.
The story of the judgement of Paris, in other words, is at least contemporary, if not older, than the poems themselves.

The poems may also preserve memories of an earlier, heroic age. The men of this time are presented as far stronger and mightier than those who came after them. Many scholars today believe that, if anything like the Trojan War ever happened, the most feasible historical background for the heroic age of the epics is the Late Bronze Age, about 400 years before the Iliad and Odyssey were first written down.
Still today the monumental architecture of the city of Troy speaks of the highly developed civilisation that flourished in this period in Anatolia. It finds its counterpart in the grand palaces that Mycenaean Greeks built in the Peloponnese in the period between 1600–1200 BC.

The precise reasons for why their civilisation collapsed in the 12th century BC are still a matter of scholarly debate.

The poems contain descriptions which evoke this glorious lost age. But they also contain details which derive from later times. There is a reference to the building of temples to the gods, for example, but the earliest Greek temples to the gods that we know of were constructed in the eighth century BC. It is partly accidental that the Homeric epics are such a chronological jumble – they preserve real memories and traces and phrases of the ancient past – and partly intentional. The war is set in the ancient past, so words and objects were chosen to characterise this earlier time.

So where might Homer fit into this? Going on the theory that there was a Homer, perhaps a poet who was born in Smyrna and worked on Chios, was he the original storyteller who came up with the plots of the epics, influenced perhaps by a conflict just north of where he came from, at Troy?

Or was Homer at the other end of the process? After being passed orally from generation to generation, the poems must have been refined when they were written down for the first time. So, should we think of Homer as a sort of editor, who shaped the inherited material into the complete poems?

Or is 'Homer' more a spirit than anything else, simply a name to give to a pair of remarkable poems which evolved and grew over hundreds of years and which can't be attributed to anyone in particular?

Everyone is entitled to their own view on this. My own is that it is not inconceivable that there was an original bard who came from the part of the world that we now know formed the setting of the poems.

Perhaps he composed the epics in outline, building on stories passed down from his parents, grandparents and great-grandparents, which later poets developed and perpetuated orally. Finally these poems were written down.

It's for each of us to decide whether to believe in one Homer or in many, in a blind bard or in a spirit that encapsulates the most astonishing process of preservation of stories told long ago. What is important is that we have the poems at all and continue to recognise their worth. It is uplifting to think that we can find as much joy in Homer's poetry today as our forebears did 3,000 years ago.

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Daisy Dunn is the author of Homer: A Ladybird Expert Book (Penguin Random House) and Of Gods and Men: 100 Stories from Ancient Greece and Rome (Head of Zeus).

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Please visit the site: https://blog.britishmuseum.org/who-was-homer/ [Go there for pix and map]

HOW ARCHAEOLOGISTS KNOW WHERE TO DIG, BY BRIDGET ALEX

Archaeologists use luck, skill and technology to find new sites — and sometimes, all three.

Growing up in 19th-century rural Germany, 7-year-old Heinrich Schliemann declared he would discover the ruins of Troy, the besieged city in Homer's Greek epic, the Iliad. His father dismissed the ambition, deeming Troy a fantasy. But the boy replied, "if such walls once existed, they cannot possibly have been completely destroyed:
vast ruins of them must still remain, but they are hidden away beneath the dust of ages."
Or so Schliemann recounts, in later autobiographical writing.

The childhood boast is impressive, but it hints at a larger problem when searching for the remnants of lost peoples and civilizations. How do archaeologists know where to dig?

Schliemann, at least, seems to have figured it out. In the late 1800s as a retired businessman with a self-made fortune, Schliemann found the site of ancient Troy in present-day Turkey. Schliemann located the city thanks to geographic descriptions in the Iliad, plus his obsessive drive, surplus wealth and good luck.

His tactics weren't necessarily unusual: Ancient texts have led archaeologists to other discoveries. Medieval Viking sagas helped archaeologists find 1,000-year-old sites in Newfoundland, Canada — the oldest traces of Europeans in North America (some 500 years before Columbus). And the Bible has guided digs in the Near East. Even works of fiction, mythology and religion may refer to places that really existed.

But few societies left written records. Texts are no help in locating remains from most humans, or pre-human ancestors. Instead, archaeologists must often search for clues written in the landscape.

So how do they choose a spot likely to harbor ancient remains? The short answer is: a combination of high-, low- and no-tech methods.
Some sites are located through systematic research; others are stumbled upon by chance.

Tried and True
Generally, archaeologists search for subtle indicators of buried sites, such as potsherds peeking out of the soil or grassy mounds in otherwise flat terrain. To survey regions for these clues, they use images or data collected from above — by satellites and aircraft — and below the surface, using methods like ground-penetrating radar.

Or, researchers do good old-fashioned footwork. In what's known as a systematic survey, they walk a landscape, in orderly paths, looking for surfaced artifacts and other hints of underground sites.
Researchers plot finds with GPS to produce maps, revealing areas with lots of artifacts — a good clue for where to dig.

Surveys may cover a small region, but thoroughly. For example, in the 1990s researchers spent five years scouring an area of just 2.5 square miles on the Mediterranean island of Cyprus, recording artifacts from the past 5,000 years. By the study's end, they counted 87,600 potsherds, 3,092 stone artifacts and 142 promising dig sites.

This kind of ground reconnaissance is relatively low-tech, but effective. Plus, it's great exercise. The challenge is knowing what to look for. It takes experience to distinguish, say, between an ordinary rock and a stone tool, or between a natural hill and grass-covered ruins.

Bird's-Eye Approaches

If walking back and forth for days (or years) sounds tedious, you could also try the aerial approach. Using space and airborne remote sensing, archaeologists often identify archaeological features using datasets collected by satellites, planes and drones.

A bird's eye view makes it easier to spot certain landscape features caused by buried remains. For example, plants will grow thickly above buried wooden structures, and more sparsely above stone. Comparing these to regular vegetation can be a hint of something below. But the contrast may only be discernible from above, and becomes starker during dry spells. Amidst a 2018 drought, for example, a drone flying over wheat fields in Ireland captured the outline of a roughly 5,000-year-old monument, similar to Stonehenge but made of timber. The circular image in the crops was had never been seen before, and disappeared after the drought was over.

In arid regions like the Middle East satellite images offer great aerial shots. Even Google Earth has proven effective for finding unknown sites, in Afghanistan, Saudi Arabia and elsewhere. Beyond discovering new sites, aerial views help archaeologists study regional connections between sites, such as Bronze Age roadways in Syria identified from satellite shots. In this case the study used older satellite photos — snapped during 1960s Cold War spying. The declassified CORONA satellite shots were better than present-day views because recent urbanization and farmland had covered undeveloped land, erasing ancient features still visible a few decades ago.

Unfortunately, in densely forested areas satellite photos will only show treetops. In these regions, archaeologists have benefited from LiDAR, or Light Detecting and Ranging, one of the newest tools in remote sensing. Flown over a landscape, the instrument sends non-destructive laser pulses to the ground and measures the reflected beams. The data creates a detailed 3D map of terrain, with vegetation digitally removed. The ability to see through trees in this way has led to tremendous discoveries. For instance, a team using LiDAR in Guatemala recently found 60,000 structures from the ancient Maya civilization hidden until now beneath thick foliage.

Getting Grounded

After archaeologists identify a promising area, they need to select a specific spot to excavate. For this, they usually dig test pits or take cores — small probes into the ground to determine what's really down there.

There are also a number of ways to peek underground digitally without digging, including ground penetrating radar (GPR) and electrical resistivity. The latter works for the same reason that plants grow more or less lushly over different materials.

Underground features like a grave or wooden foundations will make soil damper, so it will conduct electricity more easily than dry, stony ground. For these geophysical methods, researchers drag instruments on little trolleys across the area of interest. The devices collect data on subsurface anomalies — suggesting perhaps a wall, structure or burial.

Lucky Digging

Despite the efforts of archaeologists, many sites are discovered accidentally by non archaeologists — including some of the most famous. Farmers digging a well unearthed the 2,000-year-old terracotta army of China's first emperor. Utility workers found Templo Mayor, the Great Temple of the Aztec Empire, right beneath the streets of Mexico City. Construction projects often run into ancient remains, and most countries have laws to ensure archaeologists are called in when that happens.

You never know what lies below. But before they dig, archaeologists usually have a good idea.

Please visit the site: https://www.discovermagazine.com/planet-earth/how-archaeologists-know-where-to-dig [Go there for pix]

MEGADROUGHT HELPED TOPPLE THE ASSYRIAN EMPIRE, BY MARY CAPERTON MORTON

Paleoclimate records shed light on the ancient civilization's meteoric rise and catastrophic collapse.

Around 2,700 years ago in what is now northern Iraq, the Assyrian Empire was at its zenith, dominating the cultural and political landscape of the Fertile Crescent. But within a few years, the empire collapsed, leaving the once thriving capital of Nineveh abandoned for nearly 200 years. The cause of this catastrophe is an enduring mystery, but a climate record preserved in a cave formation now is revealing that the timing of the empire's rise and fall coincided with a wet period followed by a 125-year-long megadrought.

The fall of the Assyrian Empire is considered the "mother of all catastrophes."Among scholars of Mesopotamia, the fall of the Assyrian Empire is considered the "mother of all catastrophes," said Harvey Weiss, an archaeologist at Yale University in New Haven, Conn., and an author of the new study. But despite its infamy, numerous questions remain about what triggered the collapse and why recovery of the region took over 100 years, he said. "These are long-standing questions that have dogged archaeologists for over a century" since excavations revealed the abrupt and widespread scale of the Assyrian abandonment.

Changes in climate may seem like an obvious culprit, but a lack of paleoclimate records for the region kept serious inquiries at bay, said lead author Ashish Sinha, a paleoclimatologist at California State University, Dominguez Hills. "Due to war and political instability, hardly any work has been done in this region since the 1980s," he said. "The paleoclimate records that were available were low resolution and poorly dated, obscuring this pivotal time period surrounding the Assyrian collapse."

"It All Makes Sense Now"

The new study relies on a limestone stalagmite called a speleothem recovered from the Kuna Ba cave in northeastern Iraq, about 300 kilometers southeast of the modern city of Mosul, just across the Tigris River from the ruins of Nineveh. By tracking the ratios of oxygen and uranium isotopes, which are sensitive to variations in precipitation and temperature, the team was able to reconstruct a high-resolution record of nearly 4,000 years of paleoclimate history for the region.

Researchers then aligned the precipitation records with archaeological and written cuneiform records and found a remarkable correlation: The rise and zenith of the Assyrian Empire, from 920 to 730 BCE, occurred during a period of higher-than-average rainfall, deemed the Assyrian megapluvial, that lasted from 925 to 725 BCE. And the fall of the empire, between 660 and 600 BCE, falls within the peak drought period that lasted from 675 to 550 BCE. This 125-year megadrought helps explain why Nineveh was not resettled for over a century after its abandonment, Weiss said.

"The Kuna Ba record is nothing short of a revelation," Weiss said. "It all makes sense now. No wonder they left and didn't come back. Of course, the question of where they went is still a mystery. We may have resolved some long-standing questions, but we've also opened many doors to new ones. This is a whole new frontier."

"It's not hard to draw a clear line between food and water security and political unrest."Archaeological evidence indicates that other cultures in the region did not appear to have been as affected by the megadrought as the Assyrians were, Weiss said. "Assyria was an agrarian society dependent on seasonal precipitation for cereal agriculture. To the south, the Babylonians relied on irrigation agriculture, so their resources, government, and society were not as affected by the drought."

This distinction helps explain why the relatively small Babylonian and Mede armies were able to invade Nineveh, then the largest city in the world. "Now we have a historical and environmental dynamic between north and south and between rain-fed agriculture and irrigation-fed agriculture through which we can understand the historical process of how the Babylonians were able to defeat the Assyrians," said Weiss.

This pattern lines up with historical records of major collapses in other ancient societies, such as the Mayan and Khmer Empires. In these instances, too, corresponding paleoclimate records show agrarian societies flourishing during times of optimal climate and declining in times of drought.

"Agrarian societies are very vulnerable to drought events," said Colin Kelley, a climate scientist at the Center for Climate and Security in Washington, D.C., and at Columbia University in New York City who was not involved in the new study. "It's not hard to draw a clear line between food and water security and political unrest."

Relevance to Modern Drought Cycles

The severity of the Assyrian megadrought also helps add some perspective on modern drought cycles in the Middle and Near East, Kelley said. "This study is really valuable for putting what's happening today in this region in proper context. The past shows us what's possible: How dry can it get [and] for how long?"

Over the past 100 years, the Middle East has experienced at least four severe multiyear droughts. "These seem to be happening with greater frequency and severity, which is in line with what we expect with climate change: Dry places are getting drier," Kelley said. "How this contributes to political unrest in this region is very complicated, but it's clear that climate change and drought are major factors that should not be underestimated, in the past or in the future."

The new study was published in Science Advances in November 2019.

Please visit the site: https://eos.org/articles/megadrought-helped-topple-the-assyrian-empire

NEW BUILDING FOUND AT EPIDAURUS' ASCLEPIEION IN SENSATIONAL ARCHAEOLOGICAL DISCOVERY, BY PHILIP CHRYSOPOULOS

The Asclepieion of Epidaurus on the Peloponnesian Peninsula is one of the most important ancient sites in the entire world.

Today, it owes a great deal of its fame to the theater, a wonder of acoustics which is still in operation today, but in ancient times it served as a medical sanctuary, and serious illnesses were healed there.

People from all over the Eastern Mediterranean region flocked to Epidaurus in antiquity to find cures for their various maladies. It was a spacious resort which included guesthouses, a gymnasium, a stadium and the famous theater, which served to "elevate the soul," which ancient Greeks saw as the goal of all theatrical plays, both tragedies and comedies.

Along with its many luxurious facilities, the Asclepieion of Epidaurus offered beautiful, serene natural surroundings, with lush vegetation and stunning views of the surrounding mountaintops.

According to the poet Hesiod, who was active between 750 and 650 BC, Asclepius, the son of Apollo who was considered the ancient Greek god of medicine, was born in Epidaurus.

A new building found at Epidaurus' Asclepieion area, which was dedicated to this god, gives new insight into the famous sanctuary, mainly concerning the early years of its creation.

The newly-uncovered building is a structure from the archaic era, whose function is currently unknown. It was built on a site adjacent to where the Tholos, or dome, the most iconic building of the Asclepieion, is situated.

The building, rectangular in plan, had a basement space corresponding to the ground floor, with mosaics placed in a peristyle form. According to the information gleaned so far from the excavation, which is still in progress, the building dates back to around the year 600 BC.

University of Athens Professor Vassilis Lamprinoudakis, head of the excavations in ancient Epidaurus, explained to the Athens-Macedonian News Agency "This means the worship of Asclepius appears to have begun earlier in the Asclepieion of Epidaurus. Until now, it was believed to have begun around 550 BC, i.e., in the middle of the sixth century BC.

"Now it is evident that the structures are earlier, and this is particularly important for the history of the sanctuary and for the history of Asclepius himself," the archaeologist noted.

"At the place where the Tholos was later built, a part of a building, a 'double' building, with basement and ground floor has been found. Since there is a basement, like in the Tholos, we consider it to be a forerunner of this 'mysterious' building called the Tholos," Lamprinoudakis stated.

"When it was decided to build the Tholos, this building was demolished. The empty space created by its basement was filled with relics from the old building, but also from other parts of the sanctuary. That is because (when) the great program of the 4th century BC began, some other buildings were also demolished, the material of which was buried with respect in the place," he added.

The archaeologist explained that the name Tholos "was only given to the structure by the ancient traveler Pausanias in the second century AD. Its original name, as we know from the inscriptions of the 4th century BC, was 'Thymeli.' Thymeli was a kind of altar (used in sacrifice), in which offerings were made without blood."

Lamprinoudakis continued, saying "Research tells us that the Tholos was a kind of underground house of Asclepius, where patients were treated by injection." The patient who slept in this special place would dream of the god Asclepius to reveal to him the cure for his illness. "This former building had a function similar to that of the Tholos, that is, its basement served as the seat of Asclepius on earth," the archaeologist explained.

"The new building, however, also gives important clues to the topography of the sanctuary. It explains the orientation of some other constructions that follow," Lamprinoudakis concluded.

The archaeological dig at the sanctuary of Asclepius of Epidaurus, which has been carried out by the Department of History and Archeology of the University of Athens since 2016, continues today.

The excavations, carried out with the support of the Ephorate of Antiquities of Argolis, were funded by the organization "Asclipiades" in 2016-2017 and by the Stavros Niarchos Foundation in the years 2018-2019.

Please visit the site: https://greece.greekreporter.com/2020/01/29/new-building-found-at-epidaurus-asclepieion-in-sensaional-archaeological-discovery/?fbclid=IwAR0sfglOuiA3kTEywUdxgdaH3b_7ZlH4adI4IS6l48H3FRHiBMVQd6RUDmE