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

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

Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

- Μάιος 2018 -

You'll come to learn a great deal if you study the Insignificant in depth. (*Odysseus Elytis*)

Newsletter of the Hellenic Society of Archaeometry

- May 2018 -

Nr. 206

ΠΙΝΑΚΑΣ ΠΕΡΙΕΧΟΜΕΝΩΝ – TABLE OF CONTENTS

ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS

CONFERENCE AT ISAW, AN APPETITE FOR THE PAST, MONDAY, APRIL 30, 2018

1:00pm-8:00pm
Conference organized by Yitzchak Jaffe (ISAW Visiting Assistant Professor) and Kelila Jaffe (NYU Food Studies)

This endeavor will bring scholars of the ancient world and food specialists together to create and serve the fruits of their collaborative efforts to the NYU community. Teams composed of chefs and scholars are cooperating on research projects focusing on food to study and create a consumable final product.

The organizers' aim is not simply to combine ingredients in a pot from a particular time and place. Instead, the nature of each team's project will be one in which collaboration between various specialists will provide for novel and concrete research perspectives. There are seven teams spanning the globe and countless millennia each working together on multi-disciplinary projects investigating complex social issues by addressing food and cuisine.

Kitchen scene from Dahuting 打虎亭 tomb - Eastern Han Dynasty (25-220 CE) Program

1:00pm - Introduction and Opening Remarks Yitzchak Jaffe (ISAW Visiting Assistant Professor), Alexander Jones (Leon Levy Director, ISAW), and Kelila Jaffe (NYU Food Studies)

1:30pm - Scaling the Heights of Filial Gourmandism: Reconstructing the "Bake" (Bao 炮)
Paul Nicholas Vogt (Indiana University) and Wai Hon Chu (Institute of Culinary Education and NYU)

2:00pm - Babylonian Cooking
Agnete Lassen (Yale University), Pia Sörensen (Harvard University), Pia Sörensen (Harvard University), Gojko Barjamovic (Harvard University), Nawal Nasrallah (Culinary Historian, Author, and Chef), and Chelsea Graham (Yale University)

2:30pm - What Do Barbarians Eat? Food and Society at the Fringes of Bronze Age China
Yitzchak Jaffe (ISAW Visiting Assistant Professor), Karine Taché (CUNY Queens College), and Raymond Childs (Chef, ISAW)

3:00pm - Fish Sauces at the Roman Table
Sally Grainger (Independent Scholar), Cathy Kaufman (New York University), Alessandra Pecci (University of Barcelona), and Edward Biddulph (Oxford Archaeology)

3:30pm - Coffee Break

4:00pm - The Medieval Blancmage

Amy Bentley (NYU Food Studies), Jennifer Berg (NYU Food Studies), and Ryan Harrington(NYU Food Studies)

4:30pm - Bygone Fish: Rediscovering the Red Sea Parrotfish as a Delicacy of Byzantine Cuisine Uri Jeremias (Chef and Founder, Uri Buri), Guy Bar-Oz (University of Haifa), Gil Gambash(University of Haifa), and Efraim Lev (University of Haifa)

5:00pm - Free of Tainting: Vegetarian Recipes from Benxin's Studio in Song China Robban Toleno (Columbia University) and Amanda Cohen (Chef, Dirt Candy)

5:30pm - Comments and Discussion
Roger Bagnall (ISAW), Pam Crabtree (NYU Anthropology), Krishnendu Ray (NYU Food Studies)

The workshop is the result of the combined efforts of ISAW, the NYU Department of Anthropology, and the NYU Department of Nutrition and Food Studies, with additional sponsorship from the NYU Center for Ancient Studies.

PLEASE NOTE: A tasting symposium requiring separate registration will take place on May 1st at the NYU Department of Nutrition and Food Studies. Teams will prepare tastings of their collaborative research.

Stations will be set up where each team will serve a sample of their food research product for attendees to consume.
RSVP Required

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ISAW
15 East 84th Street
New York, NY 10028
Tel: 212-992-7800
isaw@nyu.edu
isaw.nyu.edu

****

Please visit the site: http://isaw.nyu.edu/events/appetite-for-the-past [Go there for required RSVP]

INTERNSHIP ANNOUNCEMENT, NIA - LEIDEN WORKSHOP, 'CONSERVATION, DOCUMENTATION & PHYSICOCHEMICAL STUDY OF GLAZED CERAMICS', ATHENS & CHALKIS (CENTRAL GREECE), 18 - 29 JUNE 2018

Workshop coordinator:
Prof. Dr. J.A.C. Vroom**,** Faculty of Archaeology, Leiden University (NL)

Contact for more information:
Adamantia Panagopoulou, MA (workshop instructor): **m.panagopoulu@hotmail.com**
This workshop provides an unique opportunity for BA, MA/RMA & PhD students to gain more knowledge and a hands-on experience in Byzantine, Medieval and Post-Medieval pottery conservation in Greece. Furthermore, a first approach of physicochemical analyses will be presented. All teaching will be in English.
All participants will receive:
5 ECTS, project notes, certificate & a T-shirt.

Venue: Netherlands Institute at Athens NIA); Archaeological Museum and Ephorate of Euboea at Chalkis (modern Chalkida); Research Center / Laboratory 'NCSR Demokritos' at Athens.

Application deadline: **30 April 2018**, or until the places are filled (maximum 15 persons).

Application: application forms can be downloaded from the website of the Netherlands Institute at Athens (NIA): see www.nia.nl**.** Completed forms (including a motivation letter) should be send to: nia@nia.gr

1ST INTERNATIONAL CONFERENCE ON "TRANSDISCIPLINARY MULTISPECTRAL MODELLING AND COOPERATION FOR THE PRESERVATION OF CULTURAL HERITAGE", NATIONAL TECHNICAL UNIVERSITY OF ATHENS, OCTOBER 18TH-21ST, 2018, ATHENS, GREECE

Innovative scientific methodologies and challenging protection of cultural heritage, have initiated a universal approach, merging capabilities and know engineering, surveying engineering technology and archaeology, as well as heritage professionals and policy makers in cultural heritage technologies with innovative analytical and non digital techniques and archaeometric methods multispectral modelling towards the sustainable preservation of cultural heritage. Innovation is enhancing and revealing a critical dimension of the preservation of cultural heritage along with social participation and communication.

The National Technical University of monuments" [Prof. A. Moropoulou, Prof. Emer. M. Korres, Prof. A. Georgopoulos, Prof. C. Spyrakos, Ass. Prof. C. Mouzakis], scientific responsible for the Holy Aedicule's rehabilitation of Jerusalem, with the Ministry of Culture and Sports the Ministry of Digital Policy, Telecommunications and Media of Greece and the Technical Chamber of Greece organize the 1st International Conference on "MULTISPECTRAL MODELLING AND COOPERATION FOR THE PRESERVATION OF CULTURAL HERITAGE" [TMM_CH] on October 18th-21st, 2018, in Athens, Greece, discussing modern trends in the original agora of our technological and democratic roots.

The conference will be held at the Stavros Niarchos Foundation Cultural Center, with reference to the "interactive digital exhibition of advanced technology for the monument and the restoration work of the Holy Aedicule of the Holy Sepulchre in Jerusalem" that will be held at the Byzantine and Christian Museum of Athens [opening on May 21st, 2018 until spring 2019]. Parallel sessions will be held at the National Technical University of Athens, Averof Building of Patission historic complex [Europa Nostra Award for its conservation and rehabilitation in 2012]. Scientific walk and talk visits to Acropolis and Ancient Agora [in the footsteps of the Greek Peripatetic Philosophical School] and other major archaeological sites are planned on Sunday, October 21

The international Conference is organized under the auspices of the Presidency of the Hellenic Republic and the Hellenic Parliament, in cooperation with international organizations and associations [NGS, WMF, ICOMOS, CIPA, OWHC, et al], as well as international and Greek networks and associations in the field of cultural heritage preservation.

The international scientific committee welcomes research contributions for oral and poster presentations in English. The submitted abstracts and papers will be peer

reviewed. Accepted papers will be divided into sessions. Plenary lectures [after invitation] will cover major accomplishments, trends and technical challenges. Please check important dates for submission deadlines. The Proceedings of the conference with full papers will be published in a special edition of Springer LNBIP series and will be available during the Conference.

For more information about the conference, please visit: http://www.tmm-ch2018.com/

TOPICS

 Cultural heritage identity
 Cultural heritage revealing of values and historic representation
 Cultural heritage management towards sustainable development (tourism et al)
 Education and training for the preservation of cultural heritage
 History of architecture, historic materials and structures of cultural heritage
 Geometric documentation
 Digital, augmented (AR) and virtual (VR) documentation of cultural heritage
 3D reconstruction of cultural heritage
 Interdisciplinary risk assessment and preservation of cultural heritage: design, mate and interventions / documentation, diagnosis, conservation, preservation, rehabilitation, reconstruction, restoration
 In situ advanced diagnostics and inspection by non-destructive techniques, robotics and unmanned aerial vehicles
 Laboratory testing and methods for characterization and validation of historic materials and structures
 Compatible and performing, repair and strengthening materials and techniques
 Criteria, methodologies and techniques to assess sustainable and compatible materials and interventions techniques
 Numerical modeling and structural analysis
 Seismic analysis and retrofit
 Standards, metadata, ontologies and semantic processing in cultural heritage
 Tools for multidimensional and multidisciplinary modeling
 Monitoring of monuments' response to environmental stresses and of structural health
 Enhancing resilience of cultural heritage against climate change and natural hazards
 Interdisciplinary knowledge based decision making
 Management of cultural heritage preservation projects and strategies
 Interdisciplinary projects and methodologies
 Historic architectural sites and preserved monuments as open labs of innovation and sustainable socioeconomic development
 Transdisciplinary cooperation and innovation for the preservation of cultural heritage
 Stakeholders' requirements for cultural heritage preservation
 Socio-economic and cultural impact of cultural heritage preservation
 Historic cities and centers: new strategies for protection by development and reuse
 Circular economy and innovative strategies for sustainable preservation of cultural heritage
 From research and innovation to policy for cultural heritage preservation
 Education and training for the preservation of cultural heritage
 Cultural heritage preservation with social accessibility and engagement

KEY DATES

First announcement
March 15th, 2018

Abstract submission deadline
May 5th, 2018

Abstract review deadline
May 20th, 2018

Announcement of accepted abstracts
May 21st, 2018

Early bird registration
June 15th, 2018

Paper review deadline
June 30th, 2018

Final paper submission deadline
July 16th, 2018

Notification of author's acceptance
Announcement of preliminary program
July 25th, 2018

Conference dates
October 18th-21st, 2018Full registration 4

General registration
October 18th-21st, 2018

REGISTRATION

	Deadline for early bird registration	*Deadline for late registration for inclusion in the proceedings* [1]	*Deadline for general registration* [2,3]
Date	*June 15th, 2018*	*July 31st, 2018*	*Conference dates*
Full registration [4]	*120 €*	*150 €*	*150 €*
Student registration [5]	*50 €*	*75 €*	*75 €*

[1] At least one author must pay registration before the indicated deadline in order to include the submitted paper in the proceedings.
[2] For each paper to be presented in the Conference, at least one author should cover full/student registration fee.
[3] Anyone planning on attending the conference must register on-line. The online registration form will be available soon. On-line registration will remain open during the conference. On-site registration will not be available. Registration fee can only be paid (i) via bank transfer until October 12th, 2018 or (ii) via credit or debit cards via Eventora platform before and during the conference. Please make sure all bank fees are covered by the submitting account and that the payment is free of charge (bank fees) for the receiver account.
[4] Full registration is applicable for all participants of the Conference, including members of the extended Scientific Committee, apart from invited keynote speakers. Full registration includes: access to all sessions, coffee and lunch breaks and conference material. Full registration fee does not cover Conference Proceedings.
[5] Student registration is applicable for undergraduate students, postgraduate students and PhD candidates and includes: access to all sessions, coffee and lunch breaks and

conference material. Student registration fee does not cover Conference Proceedings. A proof of the student status must be presented to the Conference Secretariat during the conference.

CYCLADIC SEMINAR - PROGRAMME 2018

THE ARCHAEOLOGICAL SOCIETY AT ATHENS, 22 PANEPISTIMIOU ST.
The seminar is organized by Marisa Marthari

PROGRAMME 2018

Monday, 21 May
Tristan Carter
Associate Professor at McMaster University
Neanderthals on Naxos! New Work on Early Prehistoric Stelida

Tuesday, 5 June
Natalie Abell
Assistant Professor at University of Michigan
Pottery Production and Interaction in the Middle Bronze Age Cyclades: A Perspective from Kea

Tuesday, 9 October
Myrto Georgakopoulou
Lecturer at University College London (UCL) Qatar
Production and Circulation of Metals in the Early Cycladic Period: New Evidence from Kavos Dhaskalio and the Western Cyclades

Tuesday, 11 December
Dr Zozi Papadopoulou
Head of the Department of Prehistoric and Classical Antiquities, and Museums of the Ephorate for the Cyclades
Antiparos: From the Early Cycladic Cemeteries to the Minoanising Middle Cycladic-Late Cycladic I Site at Agriokastro

ΚΥΚΛΑΔΙΚΟ ΣΕΜΙΝΑΡΙΟ - ΠΡΟΓΡΑΜΜΑ 2018

Η ΕΝ ΑΘΗΝΑΙΣ ΑΡΧΑΙΟΛΟΓΙΚΗ ΕΤΑΙΡΕΙΑ, ΠΑΝΕΠΙΣΤΗΜΙΟΥ 22
Οργάνωση Σεμιναρίου: Μαρίζα Μαρθάρη

ΠΡΟΓΡΑΜΜΑ 2018

Δευτέρα, 21 Μαΐου
Tristan Carter
Αναπληρωτής καθηγητής του Πανεπιστημίου McMaster
Νεάντερταλ στη Νάξο! Νέες έρευνες σχετικά με την πρώιμη προϊστορική Στελίδα

Τρίτη, 5 Ιουνίου

Natalie Abell
Επίκουρη καθηγήτρια του Πανεπιστημίου του Michigan
Κεραμική παραγωγή και αλληλεπίδραση στις Κυκλάδες της Μέσης Εποχής του Χαλκού με βάση τα δεδομένα της Κέας

Τρίτη, 9 Οκτωβρίου
Μυρτώ Γεωργακοπούλου
Λέκτωρ του Πανεπιστημιακού Κολλεγίου Λονδίνου (UCL) στο παράρτημα του Κατάρ
Παραγωγή και διακίνηση των μετάλλων στην Πρωτοκυκλαδική περίοδο: Νέα δεδομένα από τη θέση Κάβος Δασκαλιού και τις Δυτικές Κυκλάδες

Τρίτη, 11 Δεκεμβρίου
Δρ. Ζώζη Παπαδοπούλου
Τμηματάρχης Προϊστορικών και Κλασικών Αρχαιοτήτων και Μουσείων Εφορείας Αρχαιοτήτων Κυκλάδων
Αντίπαρος: Από τα Πρωτοκυκλαδικά νεκροταφεία στη Μεσοκυκλαδική-Υστεροκυκλαδική Ι θέση Αγριόκαστρο με τις μινωικές επιρροές

WHAT'S MINED IS YOURS: MAKING THE MOST OF OUR METALLURGICAL HERITAGE, HMS AGM AND BRITISH MUSEUM JOINT CONFERENCE, SATURDAY 16TH JUNE 2018, STEVENSON LECTURE THEATRE, BRITISH MUSEUM

Loic Boscher
Aude Mongiatti

The study of historical and archaeological metallurgy is arguably at a turning point, having evolved out of the shared interests of industrial metallurgists, geologists, and archaeologists, it has coalesced into a discipline in its own right. Contemporary research is now un ravelling ever more information embedded within metallurgical remains, from the aesthetic significance of objects to the valuable material information contained within degradation and manufacturing waste products holding socio-cultural insights about trade and technologies. Helped along by technological advances, these new interpretative techniques have not been exclusively driven by esoteric academic pursuits but equally so by an increasing public awareness of the value of our metallurgical heritage. This is due to a confluence of social, political, and economic changes happening over the last few decades. Indeed, the normalising of metal detecting in many countries, the rising popularity of archaeology in the mainstream media, and the continued onward march of urban development highlighting the threat to a rapidly disappearing industrial landscape have all played a role in altering political and public perceptions of what constitutes valuable heritage. The challenge now lies in managing the ever expanding mountain of material, landscapes, and data available while simultaneously catalysing this wave of public interest to help preserve our metallurgical past.

The British Museum and the Historical Metallurgy Society would like to invite submissions for papers and poster presentations for this one day conference and the Socitety's AGM on the topic of the archaeology, conservation, analysis, and/or presentation of metallurgical heritage. A broad interpretation of this topic is welcomed, as are submissions from related fields, but we particularly encourage discussion within the following themes:

New approaches to the analysis and conservation of metallurgical remains and metallic objects:

- Metallurgy, metals, and museums
- Metallurgical and industrial landscapes
- Public involvement and engagement

Link to the provisional programme is available here.

Booking is available through the British Museums booking system, we advise early booking as this event will be open to the general public as well as HMS members (who gain a discount). There is no charge to attend the AGM but if you intending to attend the AGM only, please inform the conference organisers hmsagmconf@hist-met.org

For more information please contact hmsagmconf@hist-met.org

Please visit the site: http://hist-met.org/meetings/11-meetings.html?layout=blog

INFRARED AND RAMAN USERS GROUP (IRUG 13) CONFERENCE, ART GALLERY OF NEW SOUTH WALES, DECEMBER 5-7 2018, CALL FOR PAPERS

The Thirteenth Infrared and Raman User?s Group (IRUG 13) conference will be held at the Art Gallery of New South Wales, Sydney, Australia, December 5-7, 2018. The conference will include oral and poster presentations addressing all aspects of the application of infrared and Raman spectroscopies to the study of cultural artifacts and their preservation, as well as applications in forensic science.

Deadline for submission of 500-word abstracts for papers & posters: June 1, 2018

Template for abstracts available on IRUG13 Conference website: http://www.irug.org<http://www.irug.org/

Address inquiries and submissions to conference convener Paula Dredge: IRUG2018@ag.nsw.gov.au<mailto:IRUG2018@ag.nsw.gov.au

Authors will be notified July 15, 2018

Further information for registration, social events, accommodation and transportation is forthcoming and will be published soon at the Conference website. Registration will be available from 15 July. Numbers are limited.

Registration fees:	Full:	AUS $400	(plus 10% gst = $440)
	Student:	AUS $250	(plus 10% gst=$275)
	Accompanying:	AUS $200	(plus 10% gst=$220)

IRUG is a not for profit 501(C)3 organisation that encourages the development and sharing of IR and Raman reference data and information for cultural heritage studies: http://www.irug.org<http://www.irug.org/

Conference support has been provided by:

NSW Chief Scientist

ThermoScientific

****

[AGNSW]
Dr Paula Dredge
Head, Paintings Conservation

ART GALLERY OF NEW SOUTH WALES

Art Gallery Road The Domain Sydney NSW 2000 Australia
TELEPHONE: 9225 1720
www.artgallery.nsw.gov.au<http://www.artgallery.nsw.gov.au

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I acknowledge the Gadigal people of the Eora nation who are the traditional custodians of the land on which our Gallery stands.

[http://website.ag.nsw.gov.au/email_marketing/Unicorn10feb.jpg]
http://www.artgallery.nsw.gov.au/unicorn*

ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ – JOB VACANCIES/FELLOWSHIPS

7 PHD POSITIONS IN INTERDISCIPLINARY GRADUATE SCHOOL, KONSTANZ / STUTTGART, GERMANY

The University of Konstanz has been successful in the German Excellence Initiative since 2007.

The Volkswagen Foundation is funding the interdisciplinary graduate school Changing Frames. Art History and Art Technology in Exchange?, which will be hosted by the University of Konstanz in cooperation with the Stuttgart State Academy of Art and Design. The University of Konstanz Art History Department offers seven PhD positions (Salary Scale 13 TV-L / 65%) starting October 1, 2018. The contracts are limited to four years.

Information on the graduate school and possible research topics can be obtained from: http://www.litwiss.uni-konstanz.de/forschung/rahmenwechsel.

The applicant must hold a (preferably excellent, or with distinction) masters degree or equivalent in art history, cultural studies, art conservation, or a related field. He/she must be fluent in written and spoken English and have basic knowledge of German (teaching language is German, the dissertation may be handed in in English). We would like to invite candidates, who study works of art and artefacts while using methods and taking perspectives of the humanities and the sciences alike, to apply (key word: Technical Art History). A dissertation must be submitted at the end of the four-year programme at the University of Konstanz or the Stuttgart State Academy of Art and Design. The successful candidates are expected to be present at their place of study during the project period and participate in the programme, which requires the willingness to move, as well as to complete a practical semester at the Stuttgart State Academy of Art and Design. In addition, the completion of a work placement with one of the cooperating partners (Wallraf-Richartz Museum & Fondation Corboud, Cologne; Rijksmuseum, Amsterdam; Courtauld Institute of Art, London, Hamilton Kerr Institute, Cambridge) with a duration of up to six months is obligatory.

The University of Konstanz is an equal opportunity employer that tries to increase the number of women in research and teaching.

The University of Konstanz supports dual career couples. Information can be obtained from: http://www.uni-konstanz.de/dcc.

The University of Konstanz encourages applications from people with a disability. They will be given preference if appropriately qualified (contact +49 7531 / 88 ? 4016).

Your application can be submitted either in German or in English. It must include - a cover letter including a brief account of your research interests and motivation for applying for the position (approx. 2 pages)
- CV
- list of publications and contributions to conferences if any - certificates/evidence of the relevant qualifications for recruitment
- project proposal (approx. 4-5 pages): it ideally includes:
1) topic and research question,
2) relation to the ?Changing Frames? graduate school,
3) theory,
4) methods, and
5) a progress plan - if the application is submitted in German, please add an English abstract of up to one page
- Academic recommendation letter

Applications should be addressed to the speakers of the Graduate School Prof. Dr. Karin Leonhard, University of Konstanz and Prof. Volker Schaible, Stuttgart State Academy of Art and Design, and - as a pdf file - sent to: tilly.laaser@uni-konstanz.de using the reference number 2018/064. Closing date is May 31, 2018.

Interviews will take place on July 26 and 27, 2018 at the University of Konstanz.

Additional information about the positions and graduate school can be obtained by contacting the Coordinator Dr. Tilly Laaser: tilly.laaser@uni-konstanz.de

ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS

SHORT COURSE AT THE UNIVERSITY OF SHEFFIELD - THE HISTORY OF THE BRITISH FAUNA, UNIVERSITY OF SHEFFIELD, 16-19 JULY, 2018

The Zooarchaeology Team of the University of Sheffield would like to let you know that there are still places available for **History of the British Fauna: wild and domestic vertebrates** short course.

The **History of the British Fauna: wild and domestic vertebrates** short course will run for the first time, from the 16th to the 19th of July 2018. Thematic sessions will be delivered during the first three days, while a trip to the famous Creswell Crags caves, which also includes a tour of the Ice-Age Museum to learn about our early ancestors and their animals, has been organised for the last day (optional).

The course aims to provide the participants with a basic knowledge of the development of the British fauna from the Pleistocene to Modern day. Topics such as evolution, zoogeography, domestication, introductions and extinctions will be addressed, including how humans and animals interacted through history. Mammals, birds, fish, amphibians and reptiles will be all included.

The course is directed to students, professionals and enthusiasts and does not require any previous knowledge. The teaching will be delivered through short lectures and hands-on practical activities.

Prices are as follows:
£ 200 (waged)/ £ 240 including trip to Creswell Crags
£ 140 (student/unwaged)/ £ 180 including trip to Creswell Crags

You can contact us at: zooarch-shortcourse@sheffield.ac.uk

For further information please see:
https://www.shef.ac.uk/archaeology/research/zooarchaeology-lab/short-course

Follow us on Facebook at:
https://www.facebook.com/Sheffield-Zooarchaeology-Short-Course-100619023380021/?ref=hl

and on Twitter at:
https://twitter.com/ZooarchLabSheff

NB This course is not aimed at professional and/or experienced zooarchaeologists. We would be grateful if you could spread the news, as you may know of people who may be interested. Apologies for cross-posting.

Please also note that this course is not run for profit but as educational tools. If any income is generated is reused to enhance our facilities, which are fully available for the use of the general public, at no charge.

With best wishes,

The Sheffield Zooarchaeology Team

INTERNET SITES

THE STRANGE HONEYCOMB HOUSES OF ÇATALHÖYÜK

Conversations with Richard Fidler, Sarah Kanowski

Nine thousand years ago, humans first settled at place called Çatalhöyük, on a wetland teeming with fish and water birds.

The nomadic people who settled on the Konya plain in Turkey created one of the first villages on earth.

Archaeologist Serena Love spent many years there unearthing their history. She discovered the people lived in small, pod-like houses made from mud bricks. These houses without windows or doors were clustered together in a honeycomb formation. Inside, the walls were plastered a gleaming white and often adorned with paintings of wild boar, handprints, or long, red stripes.

These houses were also burial grounds. Sometimes up to thirty people were buried under the floor, while people continued their daily lives inside.

Duration: 1hr
Broadcast: Thu 19 Apr 2018, 11:00am

Please visit the: http://www.abc.net.au/radio/programs/conversations/serena-love/9652074 is a link to a one hour audio

ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

THE OXFORD HANDBOOK OF ARCHAEOLOGICAL CERAMIC ANALYSIS

Bryn Mawr Classical Review 2018.04.31

Alice M. W. Hunt (ed.), The Oxford Handbook of Archaeological Ceramic Analysis. Oxford handbooks. Oxford; New York: Oxford University Press, 2017. Pp. xxxiv, 724. ISBN 9780199681532. $150.00.

Reviewed by Sarah A. James, University of Colorado Boulder
(sarah.a.james@colorado.edu)

Table of Contents:
http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199681532.001.0001/oxfordhb-9780199681532

This book is OUP's latest guide to the field of archaeology. It provides excellent up-to-date descriptions of scientific techniques used in ceramics analysis, while appropriately emphasizing the need for a more cooperative approach between archaeologists and scientists.
Building such bridges seems more possible than ever, thanks to the contributors who clearly strove to make their work accessible to non-specialist archaeologists and anthropologists at all levels. For these efforts, the volume, its editor, and the authors are highly commended by this archaeologist.

All authors are either specialists in different techniques of ceramic analysis or archaeologists familiar with the application of such approaches. Each chapter, however, is written from the perspective of an analyst rather than an anthropologist or archaeologist. A recurrent argument in the chapters is that the theoretical/scientific basis of an analytical technique needs to be thoroughly understood and then employed with methodological rigor to achieve the best possible results. Moreover, the authors emphasize that any type of analysis should be selected with a knowledge of its strengths and weaknesses, and the subsequent results should be interpreted carefully in light of the technique and the archaeological context of the ceramic samples.
Successful case studies from sites around the world are included for most analyses to illustrate how collaborative research between archaeologists and specialists in archaeoscience on ancient pottery can yield impressive results.

Each chapter covers a different method of ceramic analysis and has a similar format: first a clear discussion of the scientific basis for each approach, then descriptions of how each method should be used for best results, and finally one or more case studies on ceramic materials to illustrate its practical application. An extensive and up-to-date bibliography is provided for most chapters. The thirty-six chapters are organized as a short introductory section followed by six parts defined by the anthropological questions that ceramic analyses can address.

The "Introduction" section consists of two chapters: one by the editor, Alice Hunt, outlining the rationale for the volume and its organization, and the other by Michael Tite, who gives an excellent overview of the history of scientific research on pottery, including a nice nod to future directions in the field.

In the second part, "Research Designs and Data Analysis", four chapters discuss how to avoid pitfalls when incorporating ceramic analysis into an archaeological project and how to deal with different types of data from such analyses in a general way. In Chapter 3, Buxeda i Garrigos and Madrid i Fernandez discuss how archaeology and archaeometry were successfully integrated to study Hispanic terra sigillata at sites across Spain. In the following chapter, Hazenfratz-Marks highlights the importance of evaluating uncertainty in archaeometric analysis as well as the main sources of variance in data and how to compensate for it. Although not related to a specific approach, Bishop's chapter (5) on mathematical analyses of data is a boon for the non-specialist. It clearly and succinctly presents the common statistical data types, tests, and tools that are best suited for describing and analyzing archaeological ceramics. A useful discussion of "recycling" data from previous studies is given by Boulanger in Chapter 6, which ends with a cogent and persuasive argument against "silo science," urging more standardization, transparency, and cooperation between research projects instead.

Eight chapters on "Foundational Concepts" constitute the third section. These chapters discuss archaeometric approaches to the basic components of ceramics and focus on approaches to sourcing raw materials, manufacturing techniques, post-depositional transformations, and morphological analyses. Chapters 7-9 discuss methods for determining the chemical composition and properties of raw clays (7) and methods of pottery production through chaînes opératoires and relational approaches (8, 9). Duistermaat's chapter
(9) argues for a bottom-up analysis that views pottery as a product of cultural "entanglements" that integrate many aspects of ancient life (shown in Tables 9.1 and 9.3), as opposed to interpreting production through the lens of ethnographic analogy. Her case study of Middle Assyrian carinated bowls convincingly demonstrates the utility of this refreshing approach. Chemical analyses are the subject of Chapters 10 and 11, on neutron activation analysis (INAA) and x-ray diffraction
(WD-XRF) respectively. Schneider's chapter (11) on mineral and chemical alteration is an excellent cautionary tale of how the chemical composition of ceramics can be changed by long-term deposition in certain environments that can significantly alter the results of testing. In the final three chapters, methods of analyzing the physical properties of ceramics are assessed. Chapter 12 critically evaluates typological studies of ceramics, suggesting some revisions that may improve their utility as interpretative tools, while Whitbread (13) and Shirvalker (14) provide useful summaries of the practice of fabric description and analytical drawing respectively.

Part IV ("Evaluating Ceramic Provenance") expands upon earlier chapters by presenting 11 discussions of specific analytical techniques, with many case studies illustrating their use and efficacy. It is implicit in these case studies that collaboration between archaeologists and specialists is essential, as nicely stated by Hall, "good archaeological science does not end with the discovery and statistical setoff of compositional groups. The next step, and perhaps the most important step, involves incorporating anthropological and/or archaeological [data] to aid in interpreting the empirical patterns [you] observe" (354). All chapters in this section stress that the most successful studies of

the origin and technology of ancient ceramics begin with strong, focused research questions and use a combination of appropriate analytical techniques.
Although the utility of some of the analyses described in these chapters for the study of ancient ceramics has not been fully demonstrated, the potential applications and preliminary studies are informative. Braeksmans and Degryse's chapter (15) gives an excellent and detailed explanation for the layperson of how ceramic petrography works and the kinds of information this common analytical technique can yield. A similar approach that has yet to be systematically used in ceramic studies is ceramic micropalaeontology, described in Chapter 16, which examines microfossils in ceramic matrices. The remaining nine chapters in this section detail methods of microscopic chemical analysis, including useful guidance on formulating research questions and sampling strategies, interpreting results, and the advantages and disadvantages of each approach. Ionescu and Hock (17) discuss electron microprobe analysis (EMPA), a destructive technique that determines the "mineral signature" of a ceramic body using properties of the clay matrix, inclusions and clasts, and firing phases. Isotopic analysis using mass spectroscopy is covered by Wiegand (18), who describes how strontium, neodymium, and lead lithogenic isotopes in an ancient ceramic can determine its origin and also be used to create "isotopic fingerprints" of pottery at the regional and supra-regional scale.
Four chapters (19-22) illustrate the great potential of x-ray-based analyses to define the chemical composition of ancient pottery in provenance studies. While most of these techniques are fairly well-known to archaeologists, including types of x-ray diffraction
(XRF) analysis, the specialists provide helpful descriptions and advice for integrating such approaches into an archaeological research program. In Chapter 23, Golitko and Dussubieux discuss the related techniques of inductively coupled plasma-mass spectrometry (ICP-MS) and laser ablation inductively coupled plasma-mass spectrometry (LA-ICP-MS), which were initially developed as cheaper alternatives to INAA but have now surpassed it in their ability to detect fine fraction elements that allow more precise and plausible provenance determinations. The following chapter (24) nicely outlines the development of INAA over the past 30 years into a mainstay of compositional analysis, with online databases of thousands of samples.
As Minc and Sterba point out, INAA is still invaluable in provenance studies, despite some limitations. The final chapter (25) in this section discusses less well-known techniques based on synchrotron radiation (SR) to study the physical and mineralogical properties of surface treatments, manufacturing techniques, and site assemblages as well as to create "elemental signatures" of pottery groups.

Section V ("Investigating Ceramic Manufacturing") focuses primarily on methods of analyzing clay matrices to determine both provenance and the manufacturing process. Chapter 26 is an exception in this respect and offers a good overview of the application of ethnography and ethnoarchaeology for understanding pottery production. Macroscopic studies of clay samples that are fired and re-fired using MGR-analysis (matrix groups by refiring) are presented as a useful auxiliary method to chemical analysis in Chapter 27. Two types of non- destructive spectroscopic analysis are presented in Chapters 28 and 29. First, Shoval describes how Fourier Transform Infrared Spectroscopy (FT-IR) allows for an assessment of mineralogical composition and with secondary techniques can provide information about firing temperatures, provenance, and classification into functional groups. A more limited type of analysis for ancient ceramics is Raman spectroscopy (29), which is most useful for studying the chemistry of pre-modern ceramic glazes, as described by Van Pevenage and Vandenabeele. In Chapter 30, Berg

and Ambers provide a highly accessible summary of the uses of x-radiography (x-rays) for analyzing forming techniques, ancient fabrics, and detecting ceramic forgeries.
The last chapter offers an insightful discussion of microscopic studies of organic inclusions in ancient ceramics. This organic material may contribute to provenance studies by indicating regional agricultural practices and may also elucidate aspects of the manufacturing process.

The last two sections (VI and VII) are comparatively short and discuss the role of ceramic analyses for determining vessel function and as a dating tool. Martinez Carillo and Barcelo (32) present a method to create empirically-based vessel typologies using computational and mathematical modeling. While this approach may not be widely adopted, it challenges us to think more systematically about our qualitative typologies. Chapters 33 and 34 provide good up-to-date discussions of common techniques for analyzing fracture resistance and thermal properties of vessels and for assessing vessel function through residue analysis. Bortolini's chapter (35) offers a good, succinct description of how archaeological ceramicists classify ancient pottery and how typologies are created in order to determine the chronological range of ceramic types. The last chapter (36) by Blain and Hall covers three techniques—thermal luminescence, rehydroxylation (RHX), and archaeomagnetism – that have great potential to provide absolute dates for ceramics. Although the latter two methods are still being developed, the possibility of directly dating ceramics is an exciting frontier in archaeoscience.

As described above, this handbook presents a series of chapters on related but largely independent methods of analyzing pottery. Such books tend to have an authoritative voice, but here a few chapters read as overly prescriptive and, as a result, some techniques seem less accessible to field archaeologists than others. The stand-alone nature of the chapters will make some readers wish that there were more cross-references or perhaps brief summaries between chapters. For the non-specialist reader, a glossary of terms would have been a very useful addition. Since not all technical terms are well defined, or are defined in one chapter but not in the next, without continuously reading through the volume, an active reader must undertake some extra research to fully appreciate each chapter.

For the Classical archaeologist, this book has much to offer. As a field, we are still developing standard practices in archaeometric ceramic analysis. This volume will be a welcome reference work for anyone formulating research questions and designs for projects that will incorporate these approaches. Many of the chapters also would make excellent class readings for undergraduate and graduate students of archaeology, as introductions to these analytical techniques.
Moreover, the case studies from around the world help remind us that ceramic analysis is a common ground for archaeologists and that Classical archaeology is part of a much larger field that seeks to understand our human past.

Please visit the site: http://bmcr.brynmawr.edu/2018/2018-04-31.html

ΕΙΔΗΣΕΙΣ - NEWS RELEASE

REMAINS OF GRAECO-ROMAN TEMPLE DISCOVERED NEAR EGYPT'S SIWA OASIS, BY NEVINE EL-AREF

An Egyptian archaeological mission from the Supreme Council of Antiquities has uncovered the remains of a Graeco-Roman temple while carrying our excavation work at the Al-Salam archaeological site, about 50km east of the Siwa Oasis.

Aymen Ashmawi, the head of the Ancient Egyptian Antiquities Department at the Ministry of Antiquities, said that the mission uncovered the front part of the temple as well as parts of its foundations, its main entrance and one-metre thick stones from its outer wall.

The outer wall leads to a front courtyard with entrances to chambers.

Ashmawi said he expects the rest of the temple to be excavated this year.

A lion statue discovered at Graeco-Roman temple near Egypt's Siwa Oasis

The head of the archaeological mission Abdel-Aziz El-Demery said that during the removal of the debris from the site, the mission uncovered architectural elements including upper lintels decorated with scenes, as well as parts of corner pillars decorated with the egg-and-dart architectural device common in the Graeco-Roman era.

El-Demery added that the mission also uncovered the remains of pots, coins, and a statue of a man with Greek facial features, as well as two limestone statues of lions, one of which is headless.

Please visit the site:
http://english.ahram.org.eg/NewsContent/9/41/295033/Heritage/GrecoRoman/Remains-of-GraecoRoman-temple-discovered-near-Siwa.aspx [Go there for pix]

FINDINGS FROM IRBID'S BAIT RAS TOMB ARE 'UNIQUE IN REGION', BY HANA NAMROUQA

Studies and excavations on Irbid Governorate's Bait Ras tomb revealed that the archaeological site is "unique on a regional level", featuring Greek and Aramaic inscriptions and many frescoes, archaeologists said on Tuesday.

The Bait Ras tomb happened to be "virtually intact", the archaeologists said, indicating that it dates back to the Roman period, specifically in the period from 1st-3rd century AD.

The Jordan Department of Antiquities (DoA) and the USAID's Sustainable Cultural Heritage Through Engagement of Local Communities Project (SCHEP) shared the Bait Ras tomb project's initial findings and future plans during a ceremony at the site of the tomb.

Discovered by sheer accident in November 2011 [sic - 2016], the tomb's walls are covered with elaborate paintings and inscriptions of significant historical value, DoA General Director Monther Jamhawi said.

"The findings are interesting and important. The tomb is unique in the region due to its size and the number of frescoes covering its walls," Jamhawi told The Jordan Times over the phone.

He noted that the tomb, which stretches over 60 sq.m, has undergone extensive documentation, conservation and scientific studying by a large multinational team of experts from Jordan, Italy, France and the US.

"The Bayt Ras Tomb Project is unique as it represents a strategic partnership between the DoA and international institutions with more than 20 specialists in the conservation and preservation of cultural heritage, especially in wall paintings and inscriptions," Jamhawi underscored.

The tomb was a burial place for a Roman dignitary, he said, highlighting that inscriptions show that the dead was admired by society and of a high social status.

"Studies will continue to reveal more findings and, once work is complete, the site will be added to the trail of archaeological sites in the area," Jamhawi highlighted.

Minister of Tourism and Antiquities Lina Annab stressed the importance of the archaeological finding, saying "the discovery of the tomb will boost the country's image and enrich the experience of tourists in Irbid".

Meanwhile, Bayt Ras Tomb project coordinator Jehad Haron said that the discovery of the tomb sheds light on a significant period of Jordanian history during the Roman era,

especially since it contains 52 Greek and Aramaic inscriptions and dozens of frescoes with accurate details that were not mentioned before in historical records.

SCHEP involved local community members in every step of the process, training 25 persons from the Irbid DoA staff and university graduates in the field of conservation and restoration of archaeological monuments, according to the statement.

A team of experts from the Higher Institute for Conservation and Restoration in Rome, the French National Scientific Research Centre and the Italian National Institute for Environmental Protection and Research were also involved in the project.

Barbara Porter, director of the American Centre for Oriental Research said that, when such important Roman remains were discovered by chance, preservation can be difficult, noting that the team and the community managed to overcome many difficulties and protect the site through the support of the local community and its cooperation with the partners in the project. "This is why we are happy to implement such projects and create jobs for the community," Porter said in a statement, noting that USAID SCHEP is dedicated to economic and community development through cultural heritage preservation and education in underserved communities across Jordan.

Please visit the site: http://www.jordantimes.com/news/local/findings-irbids-bait-ras-tomb-are-unique-region [Video at https://www.facebook.com/USAIDSCHEP/videos/1994441190875085/?t=20]

ANCIENT GREEK WATER-ORGAN SOUNDS AGAIN AT ACROPOLIS MUSEUM, BY PHILIP CHRYSOPOULOS

The Acropolis Museum in Athens is welcoming the summer season with an extraordinary free concert of music played on an ancient Greek water-organ.

The 'hydraulis' was made in the ancient Mediterranean city of Alexandria, in today's Egypt.

Ctesibius, a famous engineer of his time, built the first hydraulis which was operated by compressed air first channeled through a container of water to equalize the pressure.

The sound came from a row of pipes of different lengths. Parallel rows of pipes were subsequently added to give a polyphonic effect.

The powerful and pleasant sound made the water-organ very popular, and it was soon to be utilized in temples, theaters, hippodromes, fairs, and even the Roman imperial court.

Later, as barbarians raided the rich, ancient cities, the water-organ was abandoned and forgotten in the West.

However, the Byzantine court retained it in a more advanced form which did not require the use of water, and it eventually became an emblem of state.

In 1992, during excavations outside the villa of Dionysus at Dion, Professor Dimitris Pandermalis – now director of the Acropolis Museum – and his colleagues found an unexpected gem: A row of pipes and some large copper slabs bearing the impressions of pipes on the site of an ancient workshop.

Archaeologists took the precious find to the on-site laboratory where they established that it was a musical instrument, a water-organ.

The Dion water-organ dates from the 1st century BC and is the oldest surviving musical instrument of its kind. A reconstruction project started in 1995 and, four years later, a working replica of the hydraulis was made based on the archaeological finding and ancient descriptions.

The remains of the ancient hydraulis are exhibited at the Archaeological Museum of Dion.

In the Middle Ages, the hydraulis developed into the Western church organ.

Professor Pandermalis will present the history of the hydraulis and the discovery of the parts of the instrument during the Dion excavations. Following that, visitors will enjoy a virtuoso recital of hydraulis performed by famous Greek organist Ourania Gassiou. The

event will close with a special harp recital performed by the talented harpist Thodoris Matoulas.

The event is organized in cooperation with the Association of Friends of the European Cultural Centre of Delphi.

Please visit the site: http://greece.greekreporter.com/2018/03/30/ancient-greek-water-organ-sounds-again-at-acropolis-museum/ [Go there for pict]

THE F.B.I. AND THE MYSTERY OF THE MUMMY'S HEAD

A museum wasn't sure whose head they had put on display. That's when the F.B.I.'s forensic scientists were called in to crack the agency's oldest case.
This mummified, severed head was recovered from an ancient Egyptian tomb in 1915. Scientists needed to collect DNA to figure out whom the head belonged to.CreditMuseum of Fine Arts, Boston By Nicholas St. Fleur

In 1915, a team of American archaeologists excavating the ancient Egyptian necropolis of Deir el-Bersha blasted into a hidden tomb.
Inside the cramped limestone chamber, they were greeted by a gruesome sight: a mummy's severed head perched on a cedar coffin.

The room, which the researchers labeled Tomb 10A, was the final resting place for a governor named Djehutynakht (pronounced "juh-HOO-tuh-knocked") and his wife. At some point during the couple's 4,000-year-long slumber, grave robbers ransacked their burial chamber and plundered its gold and jewels. The looters tossed a headless, limbless mummified torso into a corner before attempting to set the room on fire to cover their tracks.

The archaeologists went on to recover painted coffins and wooden figurines that survived the raid and sent them to the Museum of Fine Arts, Boston in 1921. Most of the collection stayed in storage until 2009 when the museum exhibited them. Though the torso remained in Egypt, the decapitated head became the star of the showcase. With its painted-on eyebrows, somber expression and wavy brown hair peeking through its tattered bandages, the mummy's noggin brought viewers face-to-face with a mystery.

"The head had been found on the governor's coffin but we were never sure if it was his head or her head," said Rita Freed, a curator at the museum.

The museum staff concluded only a DNA test would determine whether they had put Mr. or Mrs. Djehutynakht on display.

"The problem was that at the time in 2009 there had been no successful extraction of DNA from a mummy that was 4,000-years-old," said Dr. Freed.

Egyptian mummies pose a unique challenge because the desert's scorching climate rapidly degrades DNA. Earlier attempts at obtaining their ancient DNA either failed or produced results contaminated by modern DNA. To crack the case, the museum turned to the Federal Bureau of Investigation.

The F.B.I. had never before worked on a specimen so old. If its scientists could extract genetic material from the 4,000-year-old mummy, they would add a powerful DNA collecting technique to their forensics arsenal and also unlock a new way of deciphering Egypt's ancient past.

"I honestly didn't expect it to work because at the time there was this belief that it was not possible to get DNA from ancient Egyptian remains," said Odile Loreille a forensic scientist at the F.B.I. But in the journal Genes in March, Dr. Loreille and her colleagues reported that they had retrieved ancient DNA from the head. And after more than a century of uncertainty, the mystery of the mummy's identity had been laid to rest.

Governor Djehutynakht and his wife, Lady Djehutynakht, are believed to have lived around 2000 B.C. during Egypt's Middle Kingdom. They ruled a province of Upper Egypt. Though the walls in their tomb were bare, the coffins were embellished with beautiful hieroglyphics of the afterlife.

"His coffin is a classic masterpiece of Middle Kingdom art," said Marleen De Meyer, assistant director for archaeology and Egyptology at the Netherlands-Flemish Institute in Cairo, who re-entered the tomb in 2009. "It has elements of a rare kind of realism."

The team that discovered Djehutynakht's desecrated chamber more than a century ago was led by archaeologists George Reisner and Hanford Lyman Story. As they explored the cliffs of Deir el-Bersha, which is about 180 miles south of Cairo on the east bank of the Nile, they uncovered a 30-foot burial shaft beneath boulders. With the help of dynamite, they entered the tomb.

In their original reports the archaeologists said the dismembered body parts belonged to a woman, presumably Lady Djehutynakht. Dr. De Meyer suspected the head belonged to the governor and not his wife.

Missing facial bones

As Dr. Freed, the museum curator prepared the items from Tomb 10A for exhibition in 2005, she reached out to Massachusetts General Hospital.
Its CT scan revealed the head was missing cheek bones and part of its jaw hinge — features that may have potentially provided insight into the mummy's sex.

"From the outside you could not tell that the mummy had been so internally tinkered with," said Dr. Rajiv Gupta, a neuroradiologist at Massachusetts General. "All the muscles that are involved in chewing and closing the mouth, the attachment sites of those muscles had been taken out."

They now had another mystery: Why did the mummy have these facial mutilations?

Along with Dr. Paul Chapman, a neurosurgeon at the hospital, Dr. Gupta hypothesized that they might be part of an ancient Egyptian mummification practice known as the "Opening of the Mouth Ceremony."
The ritual was performed so the deceased could eat, drink and breathe in the afterlife.

"It's a very specific cut they made," said Dr. Gupta, referring to the surgical removal of part of the mandible. "There's a precision to it which is what we were surprised by. Someone was actually doing coronoidectomy 4,000 years ago."

Some doctors and Egyptologists doubted that ancient Egyptians could perform that complex operation with primitive tools.

To show it was possible, Dr. Gupta, Dr. Chapman and an oral and maxillofacial surgeon performed the bone removal on two cadavers using a chisel and mallet. They drove the chisel between the lips and gums behind the wisdom teeth, and were able to remove the same bones missing in the mummified skull.

Still, the question of the mummy's identity lingered.

Tooth raiders

The doctors and museum staff determined their best chance of retrieving DNA would be by extracting the mummy's molar. "The core of the tooth was where the money was," Dr. Chapman said. Teeth often act as tiny genetic time capsules. Researchers have used them to tell the tales of our prehistoric human cousins called Denisovans, as well as to provide insight into the medical history of long dead people.

"The advantage we had is that we had a hole in the neck because the head had been torn off," said Dr. Chapman.

They snaked a long scope with a camera into the back of the mouth. The first tooth they targeted would not budge, so Dr. Fabio Nunes, who was then a molecular biologist at Massachusetts General, switched to a different molar. Sweating, he clamped down with dental forceps, gave it a few wiggles, then a few twists and "pop" — it was free.

"My main concern was: Don't drop it, don't drop it, don't drop it," he said. After he successfully maneuvered out from the neck, the room exhaled and gazed upon their prize.

"This looked like an absolutely cavity free, perfectly preserved tooth," Dr. Freed said. "I thought maybe it was Mrs. Djehutynakht who had died in childbirth. Total speculation."

The F.B.I. 's oldest forensic case

For several years, other teams of scientists tried fruitlessly to get DNA from the molar. Then the crown of the tooth came to Dr. Loreille at the F.B.I. 's lab in Quantico, Va., in 2016.

Dr. Loreille had joined the F.B.I. after 20 years of studying ancient DNA. Previously, she had extracted genetic material from a 130,000-year-old cave bear, and worked on cases to identify unknown Korean War victims, a two-year old child who drowned on the Titanic and two of the Romanov children who were murdered during the Russian Revolution (though she was unable to confirm if one was the famed Anastasia).

In the F.B.I.'s clean lab, Dr. Loreille drilled into the tooth's core and collected a tiny bit of powder. She then dissolved the tooth dust to make a DNA library that allowed her to amplify the amount of DNA she was working with, like a copy machine, and bring it up to detectable levels.

To determine whether what she had extracted was ancient DNA or contamination from modern people, she analyzed how damaged the sample was. It showed signs of heavy damage, confirmation that she was studying the mummy's genetic material.

She plugged her data into computer software that analyzed the ratio of chromosomes in the sample. “When you have a female you have more reads on X. When you have a male you have X and Y,” she said.

The program spit out “male.”

Dr. Loreille discovered the mummified severed head had indeed belong to Governor Djehutynakht. And in doing so she had help establish that ancient Egyptian DNA could be extracted from mummies.

“It’s one of the Holy Grails of ancient DNA to collect good data from Egyptian mummies,” said Pontus Skoglund, a geneticist at The Francis Crick Institute in London who helped confirm the accuracy of the finding while he was a researcher at Harvard. “It was very exciting to see that Odile got something that looked like it could be authentic ancient DNA.”

Unraveling the mummy’s genetic history

Dr. Loreille’s examination also showed that Governor Djehutynakht’s DNA carried clues to another mystery. For centuries archaeologists and historians have debated the origins of the ancient Egyptians and how closely related they were to modern people living in North Africa. To the researchers’ surprise, the governor’s mitochondrial DNA indicated his ancestry on his mother’s side, or haplogroup, was Eurasian.

“No one will ever believe us,” Dr. Loreille recalled telling her colleague Jodi Irwin. “There’s a European haplogroup in an ancient mummy.”

Dr. Irwin, the supervisory biologist at the F.B.I.’s DNA support unit, had similar concerns. To verify the results they sent a portion of the tooth to a Harvard lab, and then to the Department of Homeland Security, for further sequencing.

Then last year as the F.B.I. scientists worked to confirm their results, another group affiliated with the Max Planck Institute for the Science of Human History in Germany reported the first successful extraction of ancient DNA from Egyptian mummies. Their results showed that their ancient Egyptian samples were closer to modern Middle Eastern and European samples than to modern Egyptians, who have more sub-Saharan African ancestry.

“It was at the same time ‘Dang! We’re not first,’” Dr. Loreille said.
“But also we’re happy to see they had this Eurasian ancestry.”

Alexander Peltzer, a population geneticist at the Planck Institute and an author on the first Egyptian mummy DNA paper, said Dr. Loreille’s genetic findings fit well with what his team had found.

“Of course, one has to be careful to deduce too much from single genomes and only two locations,” he said.

Dr. Irwin also expressed caution with how the public interprets her team’s results, saying that mitochondrial DNA provides, “just a very small glimpse into somebody’s ancestry.”

Future ancient DNA work will provide insight into how diverse populations moved and mixed in Egypt millenniums ago, according to Verena Schünemann, a paleogeneticist at the University of Zurich in Switzerland who led the Egyptian mummy DNA study that was published before the F.B.I.'s.

Obtaining mummified samples for genetic sequencing may prove difficult for researchers outside of Egypt as the country's government has barred foreign researchers from taking artifacts and ancient human remains out of the country since 1983. Many investigations will instead rely on museum samples, like Djehutynakht's decapitated head.

In addition to helping lay groundwork for future exploration of ancient Egypt's migration history, Dr. Loreille and her team's work may prove beneficial to F.B.I. forensic efforts.

"We are testing techniques that may in the future help them work on remains that are highly degraded, like in the desert or that are burned," she said.

But for the Egyptologists and medical professionals enthralled by Tomb 10A, the biggest prize was finally solving the mystery of the mummified head.

"You almost feel like it's a child, like you just identified the gender of a baby," Dr. Nunes said. "It is a boy!"

Dr. Freed agreed. "We now know that we have the governor himself," she said. "We already show the head at the museum, but now we'll have to change the label!"

Please visit the site: https://www.nytimes.com/2018/04/02/science/mummy-head-fbi-dna.html [Go there for pix]

AMAZING GREEK CAVE ART FOUND TO BE OVER 11,000 YEARS OLD, BY PHILIP CHRYSOPOULOS

Archaeologists have discovered in a cave in Crete what is probably the earliest Greek art, dating back to the last Ice Age, according to the Journal of Archaeological Science.

The artwork found in Asphendou Cave is the earliest known Greek portrayal of extinct animals and is more than 11,000 years old.

Speaking to the journal, Dr Thomas Strasser of Providence College, Rhode Island said: "This is the first palaeolithic art ever found in Greece and it's significant because it deepens the history of art there by many thousands of years, and is like an eyewitness account of Ice Age Crete.

"Archaeological and palaeontological information, as well as new technologies unavailable to earlier scholars, offer evidence to confirm a palaeolithic date for the earliest carvings."

Located in the mountainous Sphakia region of western Crete, Asphendou Cave has been known for its petroglyphs, described by Strasser as "a confusing jumble of engravings that had eluded dating".

The confusion was caused because several layers of engraving were superimposed on one another. Initially it was believed that the animal depictions were feral goats and possibly as late as the Bronze Age.

However, archaeologists exposed the oldest layers, now showing a species of recently identified fossil dwarf deer named Candiacervus ropalophorus, which became extinct more than 11,000 years ago.

The species has unusually long antlers with short lateral tines, and specimens found not far north of Asphendou in caves on the north coast of Crete date to between 21,500 and 11,000 years ago.

With the use of photogrammetry, the depictions of the quadrupeds were recorded and then extracted. Then they were compared with those made from excavated Candiacervus remains.

The 37 deer engravings identified are about 5 centimeters long and the engravings shallow. They represent "a palaeolithic animal herd without ground line or background," Strasser said.

Please visit the site: http://greece.greekreporter.com/2018/04/11/amazing-greek-cave-art-found-to-be-over-11000-years-old/

NEW STUDY FINDS: ANCIENT MYCENAEAN CIVILIZATION MIGHT HAVE COLLAPSED DUE TO UPRISING OR INVASION

For many years, the prevailing theory on how the Mycenaean civilisation collapsed was that devastating earthquakes led to the destruction of its palaces in the Peloponnese, southern Greece around
1,200 BC.

Nevertheless, new evidence suggests that some type of internal uprising or an external invasion might have brought about the downfall of the Mycenaean civilisation.

From 2012, a team led by German archaeologist Joseph Maran of Heidelberg University and geophysicist Klaus-G. Hinzen has been conducting research in Tiryns and Midea. The findings of their research were published in the Bulletin of the Seismological Society of America.

“Although some of the observations from the two investigated citadels could be explained by seismic loading, alternative nonseismic causes could equally explain most observed damage. In some cases, the structural damage was clearly not caused by earthquakes”, they stressed in the study, adding that: “Our results indicate that the hypothesis of a destructive earthquake in Tiryns and Midea, which may have contributed to the end of the LBA Mycenaean palatial period, is unlikely”.

The Mycenaean civilization

Mycenaean Greece (or Mycenaean civilization) was the last phase of the Bronze Age in Ancient Greece, spanning the period from approximately
1600–1100 BC. It represents the first advanced civilization in mainland Greece, with its palatial states, urban organization, works of art and writing system. Among the centers of power that emerged, the most notable were those of Pylos, Tiryns, Midea in the Peloponnese, Orchomenos, Thebes, Athens in Central Greece and Iolcos in Thessaly. The most prominent site was Mycenae, in Argolid, after which the culture of this era is named. Mycenaean and Mycenaean-influenced settlements also appeared in Epirus, Macedonia, on islands in the Aegean Sea, on the coast of Asia Minor, the Levant, Cyprus and Italy.

The Mycenaean Greeks introduced several innovations in the fields of engineering, architecture and military infrastructure, while trade over vast areas of the Mediterranean was essential for the Mycenaean economy. Their syllabic script, the Linear B, offers the first written records of the Greek language and their religion already included several deities that can also be found in the Olympic Pantheon.
Mycenaean Greece was dominated by a warrior elite society and consisted of a network of palace states that developed rigid hierarchical, political, social and economic systems. At the head of this society was the king, known as wanax.

Mycenaean Greece perished with the collapse of Bronze Age culture in the eastern Mediterranean, to be followed by the so-called Greek Dark Ages, a recordless transitional period leading to Archaic Greece where significant shifts occurred from palace-centralized to de-centralized forms of socio-economic organization (including the extensive use of iron). Various theories have been proposed for the end of this civilization, among them the Dorian invasion or activities connected to the "Sea Peoples". Additional theories such as natural disasters and climatic changes have been also suggested. The Mycenaean period became the historical setting of much ancient Greek literature and mythology, including the Trojan Epic Cycle.

Initial decline of Mycanean Greece

In c. 1250 BC, the first wave of destruction apparently occurred in various centers of mainland Greece for reasons that cannot be identified by archaeologists. In Boeotia, Thebes was burned to the ground, around that year or slightly later. Nearby Orchomenos shared the same fate, while the Boeotian fortifications of Gla were deserted.
In the Peloponnese, a number of buildings surrounding the citadel of Mycenae were attacked and burned.

These incidents appear to have prompted the massive strengthening and expansion of the fortifications in various sites. In some cases, arrangements were also made for the creation of subterranean passages which led to underground cisterns. Tiryns, Midea and Athens expanded their defences with new cyclopean-style walls. The extension program in Mycenae almost doubled the fortified area of the citadel. To this phase of extension belongs the impressive Lion Gate, the main entrance into the Mycenaean acropolis.

It appears that after this first wave of destruction a short-lived revival of Mycenaean culture followed. Mycenaean Greece continues to be mentioned in international affairs, particularly in Hittite records. In c. 1220 BC, the king of Ahhiyawa is again reported to have been involved in an anti-Hittite uprising in western Anatolia. Another contemporary Hittite account reports that Ahhiyawan ships should avoid Assyrian-controlled harbors, as part of a trade embargo imposed on Assyria. In general, in the second half of 13th century BC, trade was in decline in the Eastern Mediterranean, most probably due to the unstable political environment there.[62]

The final collapse of Mycanean civilization

None of the defence measures appear to have prevented the final destruction and collapse of the Mycenaean states. A second destruction struck Mycenae in ca. 1190 BC or shortly thereafter. This event marked the end of Mycenae as a major power. The site was then reoccupied, but on a smaller scale. The palace of Pylos, in the southwestern Peloponnese, was destroyed in c. 1180 BC. The Linear B archives found there, preserved by the heat of the fire that destroyed the palace, mention hasty defence preparations due to an imminent attack without giving any detail about the attacking force.

As a result of this turmoil, specific regions in mainland Greece witnessed a dramatic population decrease, especially Boeotia, Argolis and Messenia. Mycenaean refugees migrated to Cyprus and the Levantine coast.[64] Nevertheless, other regions on the edge of the Mycenaean world prospered, such as the Ionian islands, the northwestern

Peloponnese, parts of Attica and a number of Aegean islands.[59] The acropolis of Athens, oddly, appears to have avoided destruction.

Hypotheses for the collapse

The reasons for the end of the Mycenaean culture have been hotly debated among scholars. At present, there is no satisfactory explanation for the collapse of the Mycenaean palace systems. The two most common theories are population movement and internal conflict.

The first attributes the destruction of Mycenaean sites to invaders

The hypothesis of a Dorian invasion, known as such in Ancient Greek tradition, that led to the end of Mycenaean Greece, is supported by sporadic archaeological evidence such as new types of burials, in particular cist graves, and the use of a new dialect of Greek, the Doric one. It appears that the Dorians moved southward gradually over a number of years and devastated the territory, until they managed to establish themselves in the Mycenaean centers. A new type of ceramic also appeared, called "Barbarian Ware" because it was attributed to invaders from the north. On the other hand, the collapse of Mycenaean Greece coincides with the activity of the Sea Peoples in the Eastern Mediterranean. They caused widespread destruction in Anatolia and the Levant and were finally defeated by Pharaoh Ramesses III in c. 1175 BC. One of the ethnic groups that comprised these people were the Eqwesh, a name that appears to be linked with the Ahhiyawa of the Hittite inscriptions.

Alternative scenarios propose that the fall of Mycenaean Greece was a result of internal disturbances which led to internecine warfare among the Mycenaean states or civil unrest in a number of states, as a result of the strict hierarchical social system and the ideology of the wanax. In general, due to the obscure archaeological picture in 12th-11th century BC Greece, there is a continuing controversy among scholars over whether the impoverished societies that succeeded the Mycenaean palatial states were newcomers or populations that already resided in Mycenaean Greece. Recent archaeological findings tend to favor the latter scenario. Additional theories, concerning natural factors, such as climate change, droughts or earthquakes have also been proposed. The period following the end of Mycenaean Greece, c. 1100-800 BC, is generally termed the "Greek Dark Ages".

Please visit the site: http://www.tornosnews.gr/en/greek-news/culture/30911-new-study-mycenaean-civilization-might-have-collapsed-due-to-uprising-or-invasion.html [Go there for pix]

FINGER FOSSIL PUTS PEOPLE IN ARABIA AT LEAST 86,000 YEARS AGO

A desert discovery builds the case for humans' early departure from Africa, by Bruce Bower

A single human finger bone from at least 86,000 years ago points to Arabia as a key destination for Stone Age excursions out of Africa that allowed people to rapidly spread across Asia.

Excavations at Al Wusta, a site in Saudi Arabia's Nefud desert, produced this diminutive discovery. It's the oldest known Homo sapiens fossil outside of Africa and the narrow strip of the Middle East that joins Africa with Asia, based on dating of the bone itself, says a team led by archaeologists Huw Groucutt and Michael Petraglia. This new find strengthens the idea that early human dispersals out of Africa began well before the traditional estimated departure time of 60,000 years ago and extended deep into Arabia, the scientists report April 9 in Nature Ecology & Evolution.

"Although long considered to be far from the main stage of human evolution, Arabia was a stepping stone from Africa into Asia," says Petraglia, of the Max Planck Institute for the Science of Human History in Jena, Germany.

Don't be misled by the vast deserts that dominate the Arabian Peninsula today. Geologic evidence indicates that Al Wusta lay within a well-watered, human-friendly area between around 95,000 and 86,000 years ago, the estimated age range for the human finger fossil, Groucutt and Petraglia's team says. Dating relied on measures of the decay of a radioactive form of uranium in the human fossil and a nearby hippo tooth. Those results were combined with a measure of exposure to natural doses of radiation in the tooth. Another technique estimated the time since the finger bone and adjacent finds were buried by sediment.

FAR-FLUNG FINGER Excavations at Saudi Arabia's Al Wusta site produced a human finger fossil dating to at least 86,000 years ago. This discovery provides the first fossil evidence for ancient human excursions from Africa to Arabia.
M. PETRAGLIA

The 2016 Al Wusta find is probably the middle bone from an adult's middle finger, suspects Groucutt, of the University of Oxford. It's unclear whether the bone came from a man or a woman, or from a right or left hand.

It's definitely human, though. To establish the fossil's identify, the researchers compared a 3-D image of the ancient finger bone with corresponding bones of present-day people, apes and monkeys, as well as Neandertals and other ancient hominids.

The newly discovered fossil fits into a rough timeline of Stone Age human departures from Africa. H. sapiens reached what's now Israel as early as 194,000 years ago (SN: 2/17/18, p. 6) and East Asia by at least 80,000 years ago (SN: 11/14/15, p. 15). Humans

arrived in Indonesia (SN Online: 8/9/17) and Australia (SN: 8/19/17, p. 10) shortly before 60,000 years ago.

How humans moved into Arabia is uncertain. Along with the finger, Al Wusta yielded 380 stone tools and 860 nonhuman animal fossils from the same time. Some of those animals, including hippos and gazelles, originated in Africa and no longer inhabit the Arabian Peninsula.

Ancient groups of hunter-gatherers followed these grazing animals from North Africa into Arabia as climate fluctuations periodically turned deserts into grasslands with lakes and rivers, Petraglia proposes.

When those landscapes dried out every 20,000 years or so, people could have returned to Africa or headed farther into Asia.

Al Wusta's ancient human fossil — combined with comparably ancient stone tools found at other Arabian Peninsula sites (SN: 4/4/15, p. 16) — challenges the view that humans left Africa in one or a few major migrations, says paleoanthropologist María Martinón-Torres. Instead, small groups of African H. sapienscontinually traveled into Arabia and beyond starting nearly 100,000 years ago or earlier, suggests Martinón-Torres, who directs the National Research Center on Human Evolution in Burgos, Spain. Periods of increased rainfall may have provided "windows of opportunity" for human movements into Arabia, she adds.

Al Wusta stone tools differ in some ways from those at slightly older sites in Israel. Paleoanthropologist Donald Henry of the University of Tulsa in Oklahoma interprets those differences to mean culturally distinct African populations took a southern route into Arabia. To reach Al Wusta, East African travelers could have crossed a narrow sea channel from the Horn of Africa to Arabia's southwestern corner before heading up to Al Wusta, Henry suggests in a comment published with the new report.

Petraglia doubts that scenario. Ancient humans could easily have followed grazing animals up the Nile River Valley into the Middle East and then south into Arabia, he says, adjusting their tools to new settings along the way.

Citations

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SEEING THROUGH CLAY: 4000 YEAR OLD TABLETS IN HYPERMODERN CT SCANNER – TWO UPDATES

The Netherlands Institute for the Near East, Leiden, recently reported that a clay tablet from its Böhl Collection has been scanned at Delft University of Technology.

The micro-CT scanner is able to "see through" the envelope to make the tablet inside visible, without breaking its envelope.

UPDATE 1: How it's done
Rients de Boer and Dominique Ngan Tillard scanning clay tablet with envelope LB 2640 (Böhl Collection, The Netherlands Institute for the Near East, Leiden), video by Leiden University: https://www.universiteitleiden.nl/en/news/2018/04/4000-year-old-clay-tablets-in-hypermodern-scanner

UPDATE 2: The invisible translated
Wrapped snugly in its envelope, this clay tablet has been hidden from view for some 4000 years. Do envelope and tablet carry the same information? On the micro-CT scans made at TU Delft we can now see that the master text inside actually has a bit more. Rients de Boer translates:

Envelope: Received 15,280 liters of sesame seeds in the "gur" measure of the king from Lu-Ningirsu, son of Bazi. Signed by Ur-Abba.

Date: the year Enmaḫgalanna, in which the En-priestess of Nanna was installed (= regnal year 4 of Amar-Suen, King of Ur = ca. 2041 BCE).

The seal on the envelope reads "The scribe Ur-Abba, son of Bazi" and shows a standing man who is introduced to a seated deity by a protective goddess.

Tablet: 11,050 liters of sesame seeds in the "gur" measure of the king, the first time; 4,230 liters the second time – from Lu-Ningirsu, for the labor of the female workers, Ur-Abba has received. Date: the year Enmaḫgalanna, in which the En-priestess of Nanna was installed (= same as on envelope).

Note that this document from ancient Girsu, a province in the Kingdom of Ur, is a delivery made from brother to brother: Lu-Ningirsu and Ur-Abba have the same father. The tablet specifies that the sesame was delivered in two instalments, and that it was payment for work done by "the female workers". One might imagine that Lu-Ningirsu had commissioned textiles, beer, or other commodities from a workshop owned by his brother Ur-Abba, and paid him in produce from his sesame farm.

Full transcription and translation: http://www.nino-leiden.nl/message/seeing-through-clay-4000-year-old-tablets-in-hypermodern-ct-scanner (page has been updated).

Short video of scans through tablet and envelope: https://www.facebook.com/NINO.Leiden/videos/2005558209517386/

DID ANCIENT MESOPOTAMIANS GET HIGH? NEAR EASTERN RITUALS MAY HAVE INCLUDED OPIUM, CANNABIS, BY ANDREW LAWLER

For as long as there has been civilization, there have been mind-altering drugs. Alcohol was distilled at least 10,000 years ago in the Fertile Crescent, about the same time that agriculture took hold there. Elsewhere, for example in Mesoamerica, other psychoactive drugs were an important part of culture. But the ancient Near East had seemed curiously drug-free—until recently.

Now, new techniques for analyzing residues in excavated jars and identifying tiny amounts of plant material suggest that ancient Near Easterners indulged in a range of psychoactive substances. Recent advances in identifying traces of organic fats, waxes, and resins invisible to the eye have allowed scientists to pinpoint the presence of various substances with a degree of accuracy unthinkable a decade or two ago.

For example, “hard scientific evidence” shows that ancient people extracted opium from poppies, says David Collard, senior archaeologist at Jacobs, an engineering firm in Melbourne, Australia, who found signs of ritual opium use on Cyprus dating back more than 3000 years. By then, drugs like cannabis had arrived in Mesopotamia, while people from Turkey to Egypt experimented with local substances such as blue water lily.

Some senior researchers are still dubious, pointing out that ancient texts are mostly silent on such substances. Others consider the topic “unworthy of scholarly attention,” Collard says. “The archaeology of the ancient Near East is traditionally conservative.”

But the work is prompting fresh thinking on the relationship between substances and societies. At the International Congress on the Archaeology of the Ancient Near East here last week, for example, one scholar even reinterpreted well-studied ancient images as representing drug-taking rituals and drug-induced distortions.

Drug use almost certainly began in prehistory and spread with migrations. For example, the Yamnaya people, who swept out of Central Asia about 5000 years ago and left their genes in most living Europeans and South Asians, appear to have carried cannabis to Europe and the Middle East. In 2016, a team from the German Archaeological Institute and the Free University, both in Berlin, found residues and botanical remains of the plant, which originates in East and Central Asia, at Yamnaya sites across Eurasia. It's difficult to know whether the Yamnaya used cannabis simply to make hemp for rope or also smoked or ingested it. But some ancient people did inhale: Digs in the Caucasus have uncovered braziers containing seeds and charred remains of cannabis dating to about 3000 B.C.E.

Once people organized into city states, they may also have started large-scale production of pharmaceuticals, says archaeologist Luca Peyronel of the International University of Languages and Media in Milan, Italy. A decade ago, before the onset of Syria's brutal civil war, he was part of a team that gathered samples from an unusual kitchen in a

palace in the northwestern Syrian city of Ebla, which flourished 4 millennia ago on the outskirts of the Sumerian and Akkadian empires.

The room lacked the plant and animal remains typically associated with food preparation. But residue analyses on pots found there may explain the mystery, as Peyronel and his colleagues described in a paper last year: The researchers found traces of wild plants often used for medicine, such as poppy for opium to dull pain, heliotrope to fight viral infections, and chamomile to reduce inflammation. Given that the space contained eight hearths and pots that could hold 40 to 70 liters, the drugs could have been made in large quantities, Peyronel says.

Some of these extracts, such as opium, can induce hallucinations, although it's unclear whether the potions were used in ritual or medicine. The kitchen's location near the heart of the palace suggests its products were used for ceremonial occasions, and cuneiform tablets from the building mention special priests associated with ritual beverages, Peyronel says. The distinction between medicine and mind-altering drug may have been lost on ancient peoples. “The two hypotheses are not necessarily at odds,” he adds.

Three hundred kilometers due west and several centuries later, the ancient people of Cyprus used opium in religious ceremonies, Collard says. Residue analyses show that between 1600 and 1000 B.C.E., people poured opium alkaloids into pots crafted in the shape of the seed capsule of the opium poppy, in what Collard calls “prehistoric commodity branding.” All the jugs were found in temples and tombs, suggesting a role in ritual. Opium jugs made on Cyprus have been found in Egypt and the Levant—the first clear example of the international drug trade.

Other substances less well known today may have played a role in healing or ecstatic rituals in the ancient Near East. When King Tutankhamun's tomb, dating to the 14th century B.C.E., was opened in 1922, archaeologists found the boy-king's body covered with the flowers of blue water lily, a common motif in many Egyptian tomb paintings. Steeped in wine for several weeks, the plant yields a sedative that produces a calm euphoria.

Diana Stein, an archaeologist at Birkbeck University of London, claims archaeologists have long studied scenes of rituals involving drugs and their effects without realizing it. She argues that the banquet scenes that often adorn small seals found Anatolia, Syria, Mesopotamia, and Iran actually show people imbibing psychoactive potions. Another common motif, interpreted as a scene of contest, may instead represent the internal conflict that results when the imbiber faces an alternative reality, Stein proposes. In these images, “everything is distorted and pulsing—but they certainly knew how to carve things realistically when they wanted to,” she said at the meeting here.

“I find Diana's arguments convincing and even energizing, as they open up a new avenue for research,” says Megan Cifarelli, an art historian at Manhattanville College in Purchase, New York.

But others are more cautious. “Scholars have tended to shy away from the possibility that the ancient Near Easterners partook of ‘recreational’ drugs, apart from alcohol, so it's good that someone is brave enough to look into it,” says archaeologist Glenn Schwartz at

Johns Hopkins University in Baltimore, Maryland. But he says Stein's suggestions "seem to go too far on too little evidence," a view echoed by many at the meeting.

Collard, however, is confident that additional residue and botanical analyses, along with study of iconography and texts, will gradually persuade skeptics. Cifarelli notes that the ancients likely used drugs not just to heal, but to forge sets of beliefs, and contact a spiritual realm where healing and religion were entwined. "Most of us," she says, "are so far removed from that kind of transformative magic."

Please visit the site: http://www.sciencemag.org/news/2018/04/did-ancient-mesopotamians-get-high-near-eastern-rituals-may-have-included-opium

EGYPTIAN MUMMIES, HIDDEN TATTOOS AND THE ARCHAEOLOGIST WHO EXPERIMENTS ON HIMSELF, BY NATASHA MITCHELL

Archaeologist Renee Freidman couldn't believe her eyes.

She was pointing a digital infra-red camera at a 5,500-year-old Egyptian mummy on display at the British Museum.

"I said, 'Mmm, there's a smudge on his right arm, I wonder what that is?'," Dr Freidman said.

"We had believed that only females were tattooed [in predynastic Egypt]. I really didn't expect anything.

"And even through the glass, in the case, these two animals on his right upper arm just jumped out at me … that was a real surprise. A 'jump-up-and-down' moment."

Wise women and wild bulls

Gebelein Man, or "Ginger" as he's affectionately known for his red hair, has been a gallery favourite for over a century.

Curled up tightly in the fetal position as he was found in the late 1800s, Gebelein Man's skin and physical features remain remarkably intact — naturally mummified by the arid conditions of Egypt's Nile Valley.

Previous CT scans had revealed well-preserved internal organs too — and the fact that he came to a grisly end after being stabbed in the back.

But now, Dr Friedman's camera had also unmasked tattoos of a Barbary sheep and a wild bull on the mummy's arm.

"I was astounded," she said.

Gebelein Woman, a female mummy excavated from the same site, also revealed new tattoos with the help of the camera.

"You couldn't see it with the naked eye. It was just so clear under the infrared," Dr Freidman said.

Gebelein Woman's tattoos included three small s-shaped markings and a music clapper or staff on her right shoulder and arm.

"It gives us a whole new medium for exploring the motifs used in the predynastic period," Dr Freidman said.

Archaeologists had long assumed that only dancing girls and concubines bore tattoos in ancient Egyptian society.

Dr Friedman's research has shown both sexes were tattooed.

"It's not the nubile young things, the older women were tattooed," she said.

"They were probably the wise women, and the tattoos were there to show their initiation into cult practices and their knowledge of medicine.
It wasn't just meant for the gratification of men."

For over two decades, Dr Friedman has directed the Hierakonpolis Expedition in Egypt, at the site of a vast predynastic city under the sand — one of the biggest urban centres of its time, in around 3600 BC.

Now armed with new tools and techniques, her team have been shedding fresh light on the extraordinary findings at the site.

"Infrared radiation is heat radiation, and it's very difficult to properly image the mummies without simultaneously cooking them," said Aaron Deter-Wolf, prehistoric archaeologist and author of Ancient Ink: The Archaeology of Tattooing.

"That's bad science, right? No one wants to cook the mummy!"

However digital infrared cameras and imaging have changed that, allowing archaeologists to see things they couldn't before.

"It's a completely non-destructive process. We have the ability, with a stroke of a button, to change our understanding of tattooing in ancient Egypt," Mr Deter-Wolf said.

Why did ancient humans tattoo themselves?

The latest findings from Dr Friedman and her colleagues, recently published in the Journal of Archaeological Science, represent the oldest evidence so far of tattooing in Egypt.

Remarkably, Gebelein Man and Woman are contemporaries of the oldest tattooed mummy found in the world, from a very different culture and location.

Otzi the Iceman melted out of a glacial ice sheet in the Alps at the Italo-Austrian border, and was found by hikers in 1992. His remains are carbon dated to between 3370-3100 BC. Otzi has an extraordinary array of tattoos — 61 groups of symbols in total — mainly along his joints, spine and left wrist.

X-rays have revealed his tattoos were placed at locations where he suffered from arthritis and other ailments.

"A number of his marks seem to correspond to traditional Chinese acupuncture meridians," Mr Deter-Wolf said.

"This reinforced the idea that perhaps these tattoos were applied as a medicinal or therapeutic practice."

This possibility is still debated.

Rich in meaning

According to Mr Deter-Wolf, tattoos are potent evidence of what scientists describe as "behaviourally modern" humans.

"The desire to decorate the body implies there is complex symbolism, the presence of language, and a social network in which people have value in appearing other than they are naturally," he said.

"As a species, the reason we would do that, is that it improves our standing — it shows people how we want to be perceived."

Archaeologists believe tattoos carried deep spiritual and ritual significance in ancient societies.

"When you consider that it might have also been a death sentence —there were no antibiotics if you got an infection — it was a big deal to be tattooed then," Dr Friedman said.

"It wasn't just what you did after a few beers and before a curry."

In addition to tattoos on preserved mummies, the evidence for ancient tattoos is found in the imagery on pottery and other objects.

But there's a third source of evidence that has gone mostly unnoticed — until now.

Tools for tattoos

Mr Deter-Wolf lives in the country music capital of the world:
Nashville, Tennessee. But his own tattoos are inspired by another tribe.

One of them he's even inscribed on himself, using a needle handmade out of a deer bone.

But he's not a tattooist or DIY body modification maverick — this is experimental archaeology at work.

Mr Deter-Wolf studies Native American sites with the Tennessee Division of Archaeology, and has a special interest in the origins of ancient tattoos.

And where there are tattoos, there are also the tools used to make them — or so you'd think.

"Globally we have this great historical record of tattooing, but there are relatively few identifications of tattoo implements in the archaeological record — that has really bothered me," he said.

"It means we are overlooking an entire category of material culture.

"Is it because it's not there, is it because people don't know what to look for, or because people deliberately weren't looking for it in the past?"

Mr Deter-Wolf and a colleague have just identified what may be one of the world's oldest collections of tattooing implements — including sharpened turkey bone tips and mussel shells containing red pigment residue.

They were originally found at a Native American grave site in Tennessee containing artefacts dated between 1600-3200 BC, and have only been re-analysed now.

These findings provide the first direct evidence that ancient Native Americans practiced tattooing some 5,000 years ago, Mr Deter-Wolf said.

The self-experimenting archaeologist

Determining what tools were used to administer tattoos is a challenge — one that's turned personal for Mr Deter-Wolf.

"When you have a long sharp bone tool … it could be for leather working, making basketry, holding up hair, or it could be tattooing.
It could be for anything," he said.

"The problem is once archaeologists call it something, it is likely to be that thing you called it forever.

"It is likely we are biasing the archaeological record with our interpretations."

Mr Deter-Wolf and others have been conducting so-called microscopic "usewear" studies.

"Usewear is the idea that when you use a tool for something it develops certain microscopic traces," he said.

"For example, if you use a stone tool to cut meat it will have different microscopic trace patterns, [from] when you use the same tool to saw wood or cut cloth."

History can be skin deep ... if you dig. Listen as Natasha Mitchell uncovers the secrets of prehistoric tattoos on Science Friction.

Recent findings confirm the microscopic wear signatures from tattooing skin are identifiable and distinct.

But such tests are usually done on pig skin as a proxy for human skin.

Instead, Mr Deter-Wolf and his team made replica bone tools using technologies used in prehistoric times — splitting deer bones and whittling them down using stone tools.

First, they tattooed the skin of pig carcasses.

But they needed to know whether pig hide and human skin would produce a different microscopic wear pattern.

"There's only one way to test that. I figured I couldn't ask anyone to do it if I wasn't willing to do it myself," Mr Deter-Wolf said.

Mr Deter-Wolf and his intrepid volunteers tattooed directly onto themselves using small, handmade bone implements they made themselves.

"It turns out that even dead pig and live humans result in the same use-wear pattern," he said.

On Mr Deter-Wolf's wrist is a replica of the two parallel tattooed lines found on Otzi the Iceman.

"I figured in the name of science — and as a tribute to Otzi — we might as well do that," he said.

Look and you shall see

Until recently, evidence of tattoos in prehistoric records was mostly ignored by archaeologists.

But it was there, staring them in the face.

"We have a very sanitised view of the bodies of people who lived in the past," Mr Deter-Wolf said.

To the prudish, possibly prejudiced eyes of Western archaeologists, tattoos were associated with criminals or people of ill-repute.

"As they say, the past is a foreign country — we all approach it with our own cultural blinders on," Dr Friedman said.

"Many people wanted to see the Egyptians as very refined, and certainly not tattooed.

"I think it's the other way around. Tattooing was a real sign of status, of knowledge, and piety."

Please visit the site: http://www.abc.net.au/news/science/2018-04-21/ancient-tattoos-egyptian-mummies-archaeology/9671920