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**ΔΟΙΚΗΤΙΚΟ
ΣΥΜΒΟΥΛΙΟ:**

Ι. Μπασιάκος (πρόεδρος),
Γ. Φακορέλλης (αντιπρόεδρος),
Ε. Φιλιππάκη (γραμματέας),
Α. Οικονόμου (ταμίας),
Γ. Θεοδώρου (μέλος),
Π. Λουκοπούλου (μέλος),
Μ. Παπαγεωργίου (μέλος)

Πληροφορίες:

Γ. Φακορέλλης (σύνταξη,
επιλογή ύλης)

E-mail: yfacorel@uniwa.gr

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

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E-mail: yfacorel@uniwa.gr

Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

- Μάρτιος 2019 -

**What you leave behind is not what is engraved in
stone monuments, but what is woven into the lives
of others.**
(Pericles)

Newsletter of the Hellenic Society of Archaeometry

- March 2019 -

Nr. 216

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ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS

12TH EDITION OF THE INTERNATIONAL CONFERENCE ON STRUCTURAL ANALYSIS OF HISTORICAL CONSTRUCTIONS (SAHC 2020), 16-18 SEPTEMBER 2020, BARCELONA, SPAIN

Dear colleagues,

The 12th edition of the International Conference on Structural Analysis of Historical Constructions (SAHC 2020) will take place on 16-18 September 2020 in Barcelona, Spain.

This edition signals the 25th anniversary of the SAHC conference series, which started also in Barcelona in 1995.

The 12th SAHC conference will be held at Barcelona's [World Trade Center](#), a sea view conference resort located in Barcelona downtown, near the Port Vell (Old Port) and the Ramblas.

As in previous editions, SAHC 2020 will combine free contributions with a number of plenary sessions presented by scientists of international prestige in the field.

Submission of abstracts for SAHC 2020 is open. Authors are invited to submit a one page abstract before June 30th 2019.

Registration and submission of abstracts should be performed online. Detailed information is available [here](#).

You can contact the conference [Secretariat](#) for any question. A conference leaflet is also attached to this message.

The conference proceedings (including full papers only) will be submitted for indexation in the Data Citation Index – Web of Science (Clarivate Analytics) and in SCOPUS database.

IMPORTANT DATES

Deadline for abstract submission	-	June 30th, 2019
Announcement of accepted abstracts	-	September 30th, 2019
Deadline for submitting the full paper	-	January 15th, 2020
Announcement of accepted papers	-	March 31th, 2020

Follow us on Facebook ([SAHC 2020](#)) and our [website](#) for all the latest updates.

We look forward to welcoming you to SAHC 2020 in Barcelona in September 2020.

The Organizing Committee,

Pere Roca, Climent Molins, Luca Pelà, Paulo Lourenço, Claudio Modena

CALLS FOR CONTRIBUTIONS: ON THE HAGUE CONVENTION FOR THE PROTECTION OF CULTURAL PROPERTY

I am pleased to circulate a Call for Papers for a volume examining the utility of the 1954 Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict with regards specifically to safeguarding measures - refuges and in situ protection.

Introduction

The 1954 Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict, including its two Protocols (HC54), is the key regulatory instrument regarding Cultural Property Protection (CPP) in the event of:

- Declared war
- Any other armed conflict
- All cases of partial or total occupation of the territory of a High Contracting Party (HCP) – even in the absence of armed resistance (Article 18)

It is the only Hague convention dealing explicitly with armed conflict. Its core activities may be summarised as:

The Convention's core activities may be summarised as:

Preparatory peacetime measures:

- Preparation of inventories
- Planning of emergency measures for protection against fire and structural collapse
- Preparation for the removal of movable CP or the provision of adequate in situ protection
- Designation of competent authorities responsible for safeguarding

Regulations: executive measures during armed conflict:

The procedure by which the present Convention is to be applied is defined in the Regulations for its Execution.

(Article 20):

- Chapter 1: Taking operational control
- Chapter 2: Activating Special Protection measures
- Chapter 3: Transporting cultural property
- Chapter 4: Using the Distinctive Emblems

Written in the aftermath of the Second World War, HC54 sets out to achieve much more than establish the legal framework for CPP: it advances a series of guiding principles, developed further in the accompanying Regulations and Guidelines, addressing what safeguarding amounts to in practical terms, and how enabling activities should be managed.

Since 1954 multiple stakeholders, generally in the heritage sector, have glanced off the surface of HC54. More widely, however, states parties have, in the main, simply ignored its imperatives – ratification notwithstanding. Typically, attention has largely amounted

to addressing the definition of cultural property and the vexed issue of inventory production, allied to generally abstracted, occasionally strident, third party appeals to combatants – both national ministries of defence and their armed forces, as well as non-state actors - to honour internationally recognised legal obligations towards the safeguarding of cultural property.

Cultural property protection environment The cultural, political, legal, and military environment in which HC54 was drafted has mutated since 1954, precipitating challenges to its continuing relevance. Subsequent conventions, for example, offer competing definitions of cultural property: ‘heritage’ has emerged as the dominant cultural construct defining the field; and tangible cultural property – movable and immovable – is today twinned with the ‘intangible’. Meanwhile, physical (technological), moral, and conceptual developments have transformed the nature of armed conflict.

Peer-to-peer encounters between state parties of the kind familiar to the authors of the Convention are now relatively rare; when they do occur their conduct is conditioned by the use of technologies unimaginable in 1954. More commonly today, exponents of, for example, Salafist terrorism, or of so-called hybrid warfare, deliberately challenge the dominant ‘rules-based’ international consensus – that what amounts to acceptable conduct during armed conflict is determined with reference to the Law of Armed Conflict, itself often forgotten in HC54 discourse.

This ever-changing cultural-military climate has caused some commentators to assert that all, or parts of, HC54 is an anachronism; a convention no longer adequate to the tasks of upholding CPP best practice, and of holding to account (states) parties who fall short of its obligations.

Aim

This volume sets out to test the counter-hypothesis: that the Convention remains fundamentally fit for purpose. Considered as a set of guiding principles rendered coherent by its framework for implementation, HC54 merely needs to be interpreted in the light of prevailing circumstances for it to function as intended. The ‘problem’ with HC54 is not that it is anachronistic, but that High Contracting Parties have been decidedly lukewarm about applying it in anything but gestural terms.

Contributions

The volume seeks to address the core of the safeguarding regime imposed on HCPs under the Convention and its Protocols: the safeguarding of cultural property in the Special Protection category, employing a combination of, (a) ‘a limited number of refuges’ for the storage of movable cultural property, and (b) the provision of adequate in situ protection for ‘centres containing monuments and other immovable cultural property of very great importance’ (Article 8.1). In doing so, contributions may also address tensions between the use of Special and Enhanced Categories, and between state and non-state actors in upholding HC54 in these areas.

The editors propose to publish a collection of essays addressing either – or both – strands of the safeguarding regime: refuge use and the provision of in situ safeguarding measures. Prospective contributors are encouraged to address the topic in any way they see fit. All contributions must, however, set up HC54 as the core framing device, and

must engage in detail with its specificities. Our purpose is to promote wider understanding of the practical utility of the Convention in the contemporary world; conclusions regarding utility and its limits will reside in a close address to relevant clauses towards conclusions about the perceived opportunities and constraints HC54 offers today. Although armed conflict is of course the determining framework, considerations of the Convention's general utility as a guiding framework, or doctrine, for other contingencies, including planning for natural or man-made disaster relief, are also welcome.

Details

The book *Refuges and in situ Protection in the 1954 Hague Convention: a Contemporary Re-evaluation* is expected to be published in mid 2020, in the Boydell and Brewer *Heritage Matters* series:

<https://boydellandbrewer.com/series/heritage-matters.html>

We invite interested participants to submit a chapter title and abstract (in English) of no more than 300 words by the deadline of 1 March 2019, to paul.fox@ncl.ac.uk and emma.cunliffe@ncl.ac.uk.

Authors selected for inclusion will be notified by 1 April 2019.

The deadline for final submission of manuscripts will be 1 August 2019.

Final manuscript submissions will not exceed 6,000 words, including bibliography. It is our intent to ensure articles submitted to the volume are peer reviewed.

Editors:

Dr Paul Fox: <https://www.ncl.ac.uk/sacs/staff/profile/paulfox.html>

Dr Emma Cunliffe: <https://www.ncl.ac.uk/sacs/staff/profile/emmacunliffe.html>

View the CFP online:

<http://ukblueshield.org.uk/call-for-contributions-refuges-and-in-situ-protection-in-the-1954-hague-convention/>

WORKSHOP - THE SMELL OF MUMMIFICATION AND ANCIENT EGYPTIAN AFTERLIFE, BERLIN, MARCH 23, 2019

Experience a part of ancient Egypt coming back to life through your nose!
with Dora Goldsmith and Klara Ravat

Throughout this workshop, you will learn about the smells that defined the mummification chambers and tombs, and the scents that the ancient Egyptians themselves wished to be surrounded by in their life after death. The event is run by Egyptologist Dora Goldsmith and olfactory artist Klara Ravat.

The workshop will take three hours and is made up of three components. In the first hour, Dora will teach you about the olfactory motivation for mummification and the substances employed during the process. You will be able to smell each ingredient and you will learn about their significance for the Egyptians and the reasons behind their use. In the second hour, Klara will give you an insight to the materials by teaching you about their composition and their use in modern perfumery. In the third and last hour, you will recreate the essence of mummification in a bottle by using the very same ingredients the ancient Egyptians employed for embalming their dead! Don't worry, you will end up with an exceedingly pleasant smell!

Visit the Smell Lab in Berlin to learn about mummification and to experience a part of ancient Egypt coming back to life through your nose!

Price: 65€+ ticket fee

Time and Date: March 23, 2019, 5pm-8pm

Location: Smell Lab, Berlin

Tickets are available on: <https://www.smell-lab.org/egyptianafterlife>

For questions about the event, please e-mail: hello@smell-lab.org For questions about Dora's research, please e-mail: doragoldsmith@gmail.com

Klara Ravat is an olfactory artist based in Berlin. She is the co-founder of the Smell Lab, a community project that focuses on the investigation and practice of the art and science of the sense of smell. Klara's Smell Lab offers scent design workshops, scent summits and smell walks, where the participants can immerse themselves in the mysterious world of olfaction.

Dora Goldsmith is a PhD student of Egyptology at the Freie Universität Berlin. The topic of her PhD project is the sense of smell in ancient Egypt, the exact title of her research being "The Archaeology of Smell in Ancient Egypt. A Cultural Anthropological Study Based on Written Sources". She is a fellow of the ELES-Foundation, which supports young talented researchers.

Please visit the site: <https://www.smell-lab.org/egyptianafterlife>

ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ –
JOB VACANCIES/FELLOWSHIPS

POSTDOCS: SCIENCE AND TECHNOLOGY
IN ARCHAEOLOGY RESEARCH CENTER
(NICOSIA)

Applications are invited from researchers with at least two year experience after their PhD for 12-month postdoctoral research position, with a possible extension of another year, as part of a Research Promotion Foundation of Cyprus funded project: URBAN: the antecedents of Urbanism in Europe. The position will be based at the Science and Technology in Archaeology Research Center (STARC) of the Cyprus Institute in Nicosia.

The project, led by Dr Evi Margaritis (STARC), will focus on the archaeobotany of the Early Bronze Age site of Keros in the Aegean.

Detailed Information can be found here: <https://jobboard.cyi.ac.cy/?q=node/3349>

TEACHING SPECIALIST IN DIGITAL ARCHAEOLOGY (PHILADELPHIA)

The University of Pennsylvania Museum of Archaeology and Anthropology (Penn Museum) and the School of Arts and Sciences are seeking a Teaching Specialist in Digital Archaeology for the Center for Analysis of Archaeological Materials (CAAM; <http://penn.museum/caam>). CAAM is a joint endeavor of the Penn Museum and Penn's School of Arts and Sciences and conducts teaching and mentoring of students in archaeological science at both undergraduate and graduate levels.

CAAM combines archaeobotany, archaeometallurgy, archaeozoology, ceramics, conservation, digital archaeology, human skeletal analysis and lithics in a highly collaborative interdisciplinary program which ranges from introductory courses to independent student research. The Digital Archaeologist will also be able to take advantage of the burgeoning Digital Humanities activity at Penn, including the Price Lab for Digital Humanities (<http://pricelab.sas.upenn.edu>).

The appointment is at the rank of Lecturer A in the School of Arts and Sciences, and will be made in one of the CAAM stakeholder departments according to the appointee's area of expertise. Teaching Specialists also report to the CAAM Director with oversight from the CAAM Faculty Steering Committee. The Teaching Specialist will teach or co-teach one course per semester; train and supervise students in their respective technical area; support Penn Museum archaeological projects; publish and/or assist in publication of relevant research; and monitor and maintain their respective lab equipment.

Qualifications

Minimum: MA/MS, with a PhD highly preferred, in archaeology or a related field plus 3-5 years of archaeological field work or equivalent combination of education and experience; broad knowledge of archaeological material culture and a record of involvement in digital approaches to archaeology; teaching and mentoring experience. Knowledge of a wide variety of digital tools and technologies for the collection, analysis, visualization, and dissemination of archaeological data is required including spatial mapping, linked data, 3D and augmented reality, and other digital applications. Organizational skills and attention to detail, multi-tasking and collaborative abilities. Ability to travel as may be required.

Candidates should apply online at:

<http://facultysearches.provost.upenn.edu/postings/1545>. Applicants should include a CV, cover letter, and contact information for three individuals who will provide recommendation letters. Recommenders will be contacted by the University with instructions on how to submit a letter of recommendation to the website. Review of applications will begin immediately and will continue until the position is filled.

The Penn Museum and the School of Arts and Sciences are strongly committed to Penn's Action Plan for Faculty Diversity and Excellence and to creating a diverse faculty (for more information see:

<http://www.upenn.edu/almanac/volumes/v58/n02/diversityplan.html>). The University of Pennsylvania is an EOE. Minorities/Women/Individuals with disabilities/Protected Veterans are encouraged to apply.

POSITION: SCIENCE RESEARCH ASSISTANT **- (LABORATORY TECH): METROPOLITAN** **MUSEUM OF ART, NEW YORK CITY**

The Department of Scientific Research at the Metropolitan Museum of Art in New York City has a Research Assistant position opening in their Preventive Conservation Science Laboratory. This role provides technical support under the general direction of the Environmental Research Scientist. Areas of activity include conservation and building materials selection and testing, environmental monitoring, display case leak testing, micro-chemical testing, and insect monitoring, identification, and anoxic treatments. This includes the maintenance of databases, collection of technical data from primary sources, and communication of test results in the form of reports.

Typical applicants will have a B.S. in a physical science, though if you do not have a B.S. in science and are very interested, you are encouraged to apply.

A full position description and instructions for applying can be found at the link below (linkedin):

https://www.linkedin.com/jobs/cap/view/1114681635/?pathWildcard=1114681635&trk=job_capjs

- Please also feel free to copy the hiring supervisor, Eric Breitung when applying:
breite@metmuseum.org<<mailto:breite@metmuseum.org>>
 - The first round of applications will be reviewed during March, 2019.
-

FITCH LABORATORY BURSARY AWARDS **2019-2020**

Applications are invited from graduate students or young scholars for an award to support research at the Fitch Laboratory, British School at Athens (BSA) for up to 3 months in the academic year (September 2019-June 2020) in any of the fields in which the Laboratory is active (e.g. ceramic studies, archaeometallurgy, geophysical prospection, zooarchaeology, archaeobotany, soil micromorphology, ethnoarchaeology, landscape archaeology, archaeology of technology; normally in the context of Aegean/Mediterranean archaeology). The Bursary includes a monthly stipend (400€), BSA membership and accommodation at the BSA Hostel in Athens and, if required for research purposes, also in Knossos. The award holder will be required to submit a report on her/his research at the Laboratory to the Laboratory's Subcommittee and Director.

The successful applicant will be expected to use the facilities of the Fitch Laboratory (including analytical equipment and reference collections) as well as the BSA library to further on-going work, in the context of a postgraduate degree or postdoctoral research. No bench fee charges will be applied but the bursary holder will need to cover the cost of thin section preparation or elemental analysis. The award carries no other formal obligation, although involvement in the academic life of the BSA (for example in the form of a seminar) is welcome.

Applications should include a covering letter (indicating the preferred length and period of stay), a Curriculum Vitae, a statement of the proposed programme of research (up to one page) and the names and contact details of two referees. Applicants should ask referees to send their recommendations by the deadline. The successful applicant will be responsible for acquiring on time any required permits for study and transfer of archaeological material to the Fitch Laboratory. If the use of in-house analytical facilities is necessary for the proposed research, applicants are advised to contact the Laboratory Director to get feedback on analytical costs and timing; the latter mainly in relation to the WD-XRF analysis.

Applications and reference letters should be submitted by **Monday 20 May 2019** via e-mail as combined pdf (with the following order: cover letter, CV, research proposal) to Mrs Tania Gerousi, the BSA administrator (school.administrator@bsa.ac.uk). Candidates will be informed on the selection outcome by the end of June.

Potential applicants may contact Dr Evangelia Kiriati, the Laboratory Director (e.kiriati@bsa.ac.uk), for further information. Additional information on the School and the Laboratory can also be found at: <http://www.bsa.ac.uk/>.

ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS

INVITATION: [MINERALS] - SPECIAL ISSUE **"MINERALOGY IN ARCHAEOLOGY AND** **CULTURAL HERITAGE" (ISSN 2075-163X; IF** **1.835)**

We are organizing a special issue that may be of interest to you. As the Guest Editor, I cordially invite you to submit a manuscript for consideration and possible publication in a special issue on "Mineralogy in Archaeology and Cultural Heritage" to be published in *Minerals* (<http://www.mdpi.com/journal/minerals>), an open access journal that covers all aspects of mineralogy and mineral processing research. *Minerals* is covered by the leading indexing and abstracting services, including Science Citation Index Expanded (Web of Science), Chemical Abstracts, Scopus and GeoRef. The Impact Factor of *Minerals* is 1.835 (JCR 2017).

The Special Issue on "Mineralogy in Archaeology and Cultural Heritage" is to provide a unique forum allowing scientists working in this field to present their recent results in any of the research areas related to mineralogy in archaeology and cultural heritage. The *deadline for manuscript* submission is 15 October 2019 (but an extension can be granted, if necessary). For more details please visit the website: https://www.mdpi.com/journal/minerals/special_issues/Archaeology_Heritage

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Please let me know if you and your colleagues are interested in submitting a manuscript for this special issue.

Thank you and looking forward to hearing from you.

Luis Angel Ortega
Dpto Mineralogía y Petrología
Facultad de Ciencia y Tecnología
Campus de Bizkaia
Sarriena s/n
48940 Leioa, Vizcaya

[e-mail:luis.ortega@ehu.es](mailto:luis.ortega@ehu.es)

tln:+ 34 946 012 483

fax + 34 946 013 500



INTERNET SITES

ARCHEOLOGY - EXPLORING THE PAST WITH MODERN TECHNOLOGY DW HISTORY DOCUMENTARY IN ENGLISH

Today modern archaeology often works with digital technology.

Geophysics has allowed thousands of ancient sites to be located - a huge gain for science. The dig is no longer the be-all and end-all of archeology. We accompany some archeologists on their journey into the virtual past. Geophysics comprises a range of techniques with various geological and military functions. Geomagnetism is used to locate enemy submarines or potential reserves of oil or other minerals. Now, German and Irish archeologists have teamed up to use it to trace prehistoric grave systems. Researchers in western Germany are applying it to locate ancient procession and pilgrimage routes. Shipping archeologists in Bremerhaven are availing of digital technology to create virtual models of shipwrecks and, in Berlin, archeologists and game designers have also embarked on a joint project. As luck would have it, they scanned every millimeter of a temple in the Syrian city of Aleppo, not suspecting that, soon afterwards, the complex would be largely destroyed in the country's civil war. Their virtual model is evidence that the study of the past can have uses for the present, just as technologies of the present can help us to study the past.

Please visit the site:

<https://www.youtube.com/watch?v=VpK8fpqPJT0&feature=youtu.be>

ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

**JOURNAL OF MEDITERRANEAN
ARCHAEOLOGY 31.2 (2018)**

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Articles

Colouring the Mediterranean: Production and Consumption of Purple-dyed Textiles in Pre-Roman Times - OPEN ACCESS Beatriz Marín-Aguilera , Francesco Iacono , Margarita Gleba

A Behavioral Analysis of Monetary Exchange and Craft Production in Rural Tuscany via Small Finds from the Roman Peasant Project Stephen A. Collins-Elliott

Thinking Beyond Imitation: Mixed-style Pottery in Ancient Western Sicily William M. Balco

Spatial and Social Discontinuities in Burial Practice and the Privatisation of Mortuary Space in Bronze Age Cyprus Jennifer M. Webb

The Obsidian Evidence for Trans-maritime Interactions in the Eastern Mediterranean: The View from Aceramic Neolithic Cyprus Theodora Moutsiou

Please visit the site: <https://mailchi.mp/e1ebd1174cf7/xsa8hlpmas-3350401?e=16882de91d>[Go there for link to abstracts]

RADIOCARBON, VOLUME 61 / ISSUE 1, **FEBRUARY 2019**

Technical Note

[The Chronology of the Late Bronze \(LB\)-Iron Age \(IA\) Transition in the Southern Levant: A Response to Finkelstein's Critique](#)

Elisabetta Boaretto, Yotam Asscher, Louise A Hitchcock, Gunnar Lehmann, Aren M Maeir, Steve Weiner

[Radiocarbon, Volume 61 / Issue 1](#), February 2019, pp 1 - 11
doi: 10.1017/RDC.2018.57 Published Online on 20 November 2018

Research article

[Absolute Time Ranges in the Plateau of the Late Bronze to Iron Age Transition and the Appearance of Bichrome Pottery in Canaan, Southern Levant](#)

Yotam Asscher, Elisabetta Boaretto

[Radiocarbon, Volume 61 / Issue 1](#), February 2019, pp 13 - 37
doi: 10.1017/RDC.2018.58 Published Online on 9 November 2018
[Bomb-pulse Radiocarbon Dating of Modern Paintings on Canvas](#)

Fiona Brock, Nicholas Eastaugh, Thierry Ford, Joyce H Townsend

[Radiocarbon, Volume 61 / Issue 1](#), February 2019, pp 39 - 49
doi: 10.1017/RDC.2018.55 Published Online on 11 July 2018
[Holocene Precipitation Records from Inner Mongolia Derived from Hydrogen Isotope Compositions of Sediment Fatty Acids](#)

Qingmin Chen, Weijian Zhou, Zhe Wang, Feng Xian, George S Burr

[Radiocarbon, Volume 61 / Issue 1](#), February 2019, pp 51 - 65
doi: 10.1017/RDC.2018.75 Published Online on 25 September 2018
[An Assessment of Marine Reservoir Corrections for Radiocarbon Dates on Walrus from the Foxe Basin Region of Arctic Canada](#)

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[Sea level implications from Late Quaternary/Holocene paleosols from the Oujiang Delta, China](#)

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doi: 10.1017/RDC.2018.77 Published Online on 25 September 2018
[Molecular Fingerprinting of ¹⁴C Dated Soil Organic Matter Fractions](#)

[from Archaeological Settings in NW Spain](#)

Cruz Ferro-Vázquez, Joeri Kaal, Francisco Javier Santos Arévalo,
Felipe Criado Boado

[Radiocarbon, Volume 61 / Issue 1](#), February 2019, pp 101 - 130

doi: 10.1017/RDC.2018.62 Published Online on 18 July 2018

[A Novel Cellulose-Preparation Method](#)

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PYTHAGOREAN KNOWLEDGE FROM THE ANCIENT TO THE MODERN WORLD: ASKESIS

Bryn Mawr Classical Review 2019.02.05

Almut-Barbara Renger, Alessandro Stavru (ed.), Religion, Science. Episteme in Bewegung: Beiträge zu einer transdisziplinären Wissensgeschichte, 4. Wiesbaden: Harrasowitz Verlag, 2016. Pp. ix, 579. ISBN 9783447105941. €89.00.

Reviewed by Y. Tzvi Langermann, Bar Ilan University (tzvilangermann@yahoo.com)

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"Pythagoras can be presented in many ways: as a mathematician, a mystic, a cult leader, a proto-scientist, a proto-hippie, or a proto-Christian" (Ada Palmer, p. 211). "Perhaps the most striking feature of Pythagoreanism is the sheer variety of individuals associated with the tradition" (Samuel Galson, p. 395). The collective effort of the contributors to this excellent volume demonstrates how the Pythagorean tag manifests itself across a huge spectrum of historical settings. I will present an extensive sampling of the images and doctrines that have been associated with Pythagoras and/or Pythagoreanism. Clearly, I will not be able to draw upon all thirty-two essays.

Porphyry provides a list of characteristics of Pythagoreanism, all of which concern the soul: its immortality, its transmigration, and, as a consequence of the latter, the universal kinship of humans; not a word about celestial harmony or numbers (Gabriele Cornelli, p. 93). This "proto-Pythagorean" theory of the soul, closely related to Orphism, informed Plato's psychology. In the popular philosophy of early scholasticism, "asceticism, moderation in all things, and emotional control" were the "signature features"; by contrast, in academic theology Pythagoras was identified with one doctrine alone, the transmigration of souls (Bernd Roling, p. 103). Augustine viewed Pythagoras as a necromancer (p. 105).

We have also to deal with "Pythagoreanizing" ascetics, known from the Athenian theatre. Maurizio Giangliulio opines that a social reality may well lurk behind the theatrical construct. Moreover, attention must be called to the important role of women, "a novelty and specific characteristic of the Pythagorean paideia" (Claudia Montepaone and Marcello Catarzi, p. 136). There was a distinct female askesis recorded in the so-called "Letters of Theano". According to Proclus, studying the Timaeus with a qualified teacher transforms the soul and is thus "a distinctly Pythagorean-Socratic askesis" (Dirk Baltzly, p. 199). Such a guided reading would reveal the astronomy of the Timaeus to be a symbolic discourse teaching us, for example, about relations among higher causes, and, in so doing, purifying our souls.

Much more complex are the connections between Pythagorean and early Christian asceticism. The Sentences of Sextus present a Christianized version of ancient ascetic

trends among which the Pythagorean variety is the most prominent but certainly not the only one. Ilaria Ramelli emphasizes the continuity between "'pagan' ascetic-philosophical traditions" and the beginnings of Christian ascetism and monasticism, demonstrating just how important the Sentences are for the earliest history of the Christian variety. Immediately following upon Ramelli, Irini Viltanioti argues that Porphyry's "echoes" of Pythagorean maxims in his Letter to Marcella are intended as a response to "the Christian appropriation of pagan, especially Pythagorean, moral wisdom" (p. 164). The two papers fit very well together; but Ramelli's insistence on using quotation marks when using the word "pagan", which Viltanioti does not, bespeaks a fundamental disagreement about the nature of Pythagoreanism. Perhaps Pythagoreanism ought to be dubbed non-Abrahamic monotheism?

Alberto Bernabé disentangles Pythagorean notions of the afterlife from Orphic views; Pythagorean metempsychosis functioned not as eschatology but as a mechanism of the world order. Like Bernabé, Luc Brisson begins by dividing Pythagorean teachings into science and religion, even going so far as to state that this question "is essential for determining the Pythagorean way of life". This distinction is needed to appreciate the contribution of Iamblichus, who transformed "the philosophy of Plato into a theology, by seeking the agreement of this theology with that of Orpheus, by way of Pythagoras" (p. 47). Even if Pythagoreanism did not involve rites, Plato's regard for cults, which he took as a model for teaching, may be an imitation of Pythagoras' interest in rituals (Sylvana Chrysakopoulou, p. 83). I am uncomfortable with the severe bifurcation of science and religion that I find in some of the essays, as well as with the conflation of regimen with religion. Praxis, as manifested in ethical behavior (including dietary restrictions), need not be religious, in the sense of being a technique for coming close to a deity.

Parmenides is said to have been the disciple of Xenophanes, the first known critic of Pythagorean metempsychosis, and by this route Pythagorean influence may be detected in Plato's debate with Parmenides. Thus, when Plato describes non-being as unspeakable (*arrhētos*: Sophist 238c), he "challenges the very core of non-being ... by giving it the status of a Pythagorean taboo, which he seeks to abolish" (Chrysakopoulou, p. 81). Other Greek sources, eagerly accepted by some Christian writers, assert that Pythagoras depended upon Hebrew wisdom. This idea is part of a wider recognition of monotheistic strains in ancient Greek writings which derive from the biblical Moses (Luca Arcari, p. 186). The possible Jewish origin of pseudo-Pythagorean monotheistic proclamations continues to be debated (p. 189).

For some, the "way of life" was the mark of the Pythagorean. Some features of the *tropos tou biou* are controversial. An impressive list of authorities mention abstention from beans, but Aristoxenus reports that Pythagoras delighted in consuming beans (Giangiulio, p. 127). In the early-modern classical revival, the image of the monastic Pythagoras held sway. For the Protestant intellectual Neander, "the non-saint Pythagoras served ... as an alternative non-Catholic origin myth for pilgrimage and the monastic life", at a time when non-relics such as books served as centers for processions, non-icons decorated altars in place of saints, and so forth (Palmer, p. 222).

Then there is Pythagorean medicine. Stavros Kouloumentas argues that the early Pythagoreans evince no interest in scientific topics, such as the etiology and treatment of disease. Instead, their doctrines concerning diet and other issues related to medicine come out of "core ideas concerning purification, proportion, social organization and

numbers" (p. 260) adapted to (what appears to us as) a medical context. Andrew Barker shows that Pythagorean views on seven-month and ninth-month pregnancies drew upon the description of the world soul in the *Timaeus*, along with the idea that genesis arises from opposites which are harmoniously integrated. The harmony they speak of is arithmetical and musical, and, as Proclus and other show in detail, the numbers work out. Hynek Bartoš makes a well-reasoned case for identifying the Hippocratic *On Regimen* as the (indirect) source for Iamblichus' account of Pythagorean dietetics. This makes sense when we see that *On Regimen* itself looks like a post-Platonic Pythagorean text, complete with a musical theory; it contains hints of the transmigration of souls and other Pythagorean features. Even so, Iamblichus already knew enough to ascribe the dietetics to "the Pythagoreans" rather than to Pythagoras.

If the body could be kept healthy by dietetics, then the soul could be healed by music. Maintaining the soul in balance was important for both the individual and the social order (Antonietta Provenza). Leonid Zhmud insists on the precise definition of arithmology: "a specific genre of non-mathematical writings on the first ten numbers" (p. 322) which functions as an organized system; arithmology is sharply distinguished from number symbolism, which studies individual significant numbers. Arithmology further sees numbers as constituting a different level of reality and, therefore, it could have emerged as a genre only after Plato had established his theory of two worlds, the visible and the intelligible. Zhmud traces the conception of "the alleged doctrines of the ancient Pythagoreans" to the first century before the common era and the harmonization of Plato and Aristotle that characterizes the philosophy of that period. The "concern with numbers" is just one of the distinctive features of the "newly created Pythagoras"; other features are the connection between Pythagoras and Plato and the notion of two opposing principles (pp. 328-9). In the end, "Pythagorean arithmology stands or falls with Aristotle's account" (p. 338), since Aristotle, citing unnamed Pythagoreans, is our only classical source for key notions of arithmology, especially the significance of the decad.

Eugene Afonasin's "Pythagorean Numerology and Diophantus' *Arithmetica*" does justice to Diophantus, whom he calls "one of the greatest mathematicians of all times" (p. 350). But why, does the article that immediately follows Zhmud's painstaking study of "arithmology", revert without comment to "numerology"? Might one of the editors not have called Afonasin out on this?

Then there is Pythagorean architecture. The humanist Alberti applied not only notions of harmony and proportion, but also Pythagorean moral values, especially frugality, to both domestic and religious architecture. However, it is not clear to me that either Pythagoras or the Pythagoreans ever called the circle "the purest of all forms" (Christiane Joost-Gaugier, p. 377).

For Reuchlin (discussed here by Wilhelm Schmidt-Biggemann), Pythagoras was a kabbalist, a funnel through which the original, Adamite wisdom passed from the Hebrews; Reuchlin takes credit for renewing Pythagoreanism in the sixteenth century. Reuchlin viewed the immortal soul as a "shaper" which can be used more than once, each time giving a particular body its own unique shape.

Leibniz held that "There is nothing which does not suffer number ... Men were persuaded by Pythagoras that the greatest mysteries were hidden in numbers" (Galson, p. 399). He turned to Pythagoreanism in search of a mathematics which would allow one to

reason in morals and metaphysics “in much the same way as one does in geometry and analysis” (p. 396), but he seems to have despaired of the idea. Al-Ghazālī surveys the various alternatives to Sufism, the path that he chose in his spiritual quest. Among the other “seekers” he lists the Bāṭiniyya or esotericists, trashing their “knowledge” as “some trifling details of the philosophy of Pythagoras” whose “philosophical system is the weakest of all” (Beate La Sala, p. 429). Addressing both the Parmenides and the Timaeus, Marsilio Ficino avers that Plato “is mostly a Pythagorean, arguing under a Pythagorean persona (or mask)” (Denis Robichaud, p. 439), adding that Plato learned from the Pythagoreans that the highest objects of the intellect are ineffable (p. 446). Robichaud, who is editing Ficino’s commentary on Iamblichus’ *De secta pythagorica*, has uncovered exciting evidence for the circulation of now lost Pythagorean works among Renaissance humanists.

The French Jesuit Michel Mourgues (1642-1713) was the first early-modern writer to use the term “Pythagoreanism”. In the eyes of one eighteenth-century reviewer, Mourgues held Pythagoreanism to be “the primitive and original theology and philosophy”. In Mourgues’ own words, “Pythagoreanism and Platonism are the same thing” (Hanns-Peter Neumann, p. 455). But Pythagoras was thought also to be mediating to the West the oriental wisdom of Brahmins, Chaldeans, and especially the Hebrews. Moreover, having advocated some primitive form of heliocentrism, Pythagoreans enjoyed the prestige of being “Copernicans avant la lettre” (p. 458).

Three texts on the “Pythagorean Way of Life” are translated and studied in an appendix. The first and longest contribution is by Emily Cottrell, who looks at Arabic materials from several sources, the most important of which is Mubashshir ibn Fātik, who was associated with the Fatimid court at Cairo in the first half of the eleventh century. Ibn Fātik was a “serious bibliophile” (p. 475) in a city blessed with prodigious libraries, notably rich in Hellenistic philosophy, especially Neoplatonism, which was at the heart of the Shia ideology of the rulers. The material is difficult and there are a few rough edges to Cottrell’s translations. For example, *shanā’a* does not mean “calumny” but rather “an outrage”, “a despicable act”. Hence (p. 496) the people of Locris are telling Pythagoras that outrages are contemptible, but Pythagoras is not legally liable for it (we are not informed just what the outrage was); hence they will offer him hospitality.

In the second and third texts, Ada Palmer presents Latin and English humanist Lives of Pythagoras. The two originate from scholarly worlds that are poles apart, yet the two biographies are quite similar; the first is by Raffaele Maffei, from pre-Reformation Italy, the second by Michael Neander, from post-Reformation Germany.

This is a mammoth collection of essays, well researched and well written, with most presenting and defending a coherent point of view. Hardly a typo mars this tome. However, Bernd Roling's outstanding essay is marred by some screaming transcription errors (e.g. "Abu-l-Wata al-Mubassir", p. 106). The breathtaking scope of the volume notwithstanding, the topic is far from exhausted, and there is cause to widen the cultural scope even further. For example, this reviewer would be pleased if a future collection included essays on “proto- Pythagorean” discussions of music and numbers from Babylonian civilization.

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THE PHARAOH'S TREASURE - THE ORIGIN OF PAPER AND THE RISE OF WESTERN CIVILISATION

John Gaudet
Amberley,, pp.356, £16.99

Treasures from Ancient Egypt's wastepaper baskets

The discovery of a hoard of bills and billets-doux, on perfectly preserved papyrus, helped unlock many ancient secrets Dennis Duncan

In 2016, after some unseemly back-and-forth between the Commons and Lords, it was decided that Acts of Parliament should no longer be printed on calfskin. Instead, new acts are now recorded on paper, though, in a classic parliamentary compromise, they will still be bound between vellum covers. Since the first paper mills appeared in Britain at the end of the 15th century —and paper almost immediately became the dominant medium for print — this means that parliament has managed valiantly to hold back the paper tide for over half a millennium. (To be fair, they only stopped writing acts out by hand in 1849, four centuries after Gutenberg.)

Meanwhile, over the past 15 years, I have come to conduct most of my daily correspondence by email rather than troubling the postal service. I expect you are the same. But I doubt there are many who will be thrilled if their Valentine's card turns up as an email attachment, and it's possible that some of us feel a slight wistfulness that our acts of the land are no longer recorded on the same material as Magna Carta. Sometimes, as Marshall McLuhan put it, the medium is the message.

John Gaudet's *The Pharaoh's Treasure* tells the story of papyrus — the chief writing material of the classical period — from its emergence in Egypt, probably in the fourth millennium BC, to its eclipse, by parchment and paper, in the middle of the first millennium AD. Though other materials were used during this period — clay, wax, parchment — it is papyrus that Pliny has in mind when he writes, of first-century Rome: 'Our civilisation or at all events our records depend very largely on the employment of paper [chartae]'.

It is Pliny too who gives us the best description of how papyrus was made from the tall wetland sedge that was once abundant in the swampland of the Nile delta. The outer layer of the plant's stem is stripped away and the pith inside cut into thin slices which are lined up, with another layer placed perpendicularly on top. These are soaked, then squeezed flat and dried out, a process which binds the two layers together, and the resulting sheet is finally polished to give a smooth writing surface. Cheap and light, papyrus was also an excellent vehicle for lengthy texts, since sheets could be joined together and rolled up into one easy-to-store scroll.

Gaudet spends much time on the taste for these scrolls in the modern era and the derring-do of the papyrus-hunters (or looters, if you prefer) of the late 19th century, men such as

the British Museum's Wallis Budge who would use bribery and disguises, secret tunnels and false-bottomed suitcases to evade the authorities in Luxor and Alexandria and swell the collections of museums back home.

At the moment Budge and his rivals, backed by the spending power of their institutions, were chasing down big-ticket scrolls — the Papyrus of Ani and the Book of the Dead were among the most important acquisitions of the day — two archaeologists from Oxford were uncovering another extraordinary papyrus hoard on the site of the ancient town of Oxyrhynchus in Middle Egypt. Here, the town's rubbish mounds, preserved by the climate, have provided us with what is essentially a vast 2,000-year-old waste-paper basket. Of the Oxyrhynchus papyri, which run to hundreds of thousands of documents, only a tiny fraction are literary; most are full of the ephemera of domestic life. Shopping lists and horoscopes, wills and bills and billets-doux: writing, then as now, was part of the business of everyday life, its moments of long-lasting grandeur only an infinitesimal fraction of the whole.

The geographical particularity of the papyrus sedge gave Egypt an almost total monopoly on papyrus production. Pliny recounts the tale that parchment was invented as a rival product by the people of Pergamon after the pharaoh had capriciously cut off their papyrus supply. It's a nice story — maybe good things can come out of trade wars — and it acquires a retrospective moral when parchment eventually unseats papyrus as the dominant writing material of the Middle Ages. Sadly, it's not true. Even in Egypt, writing on leather goes back almost as far as writing on sedge, and the reasons for the decline of papyrus are manifold: the rise of Christianity and its preference for the codex — the folded and stitched book — over the scroll; the fall of Rome; the Islamic conquest of Egypt and the spread of paper; the conversion of swamps to cropland.

In the second half of the first millennium, papyrus had all but disappeared. And yet, until 1022 it was still the material on which all papal bulls were to be issued. The church, like parliament 1,000 years later, has always understood that there is a certain type of authority to be had from being several centuries behind the curve.

Please visit the site: <https://www.spectator.co.uk/2019/02/treasures-from-ancient-egypts-wastepaper-baskets/>

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The TMM_CH Conference Proceedings Team

NEW IN IA52: THE SOCIAL ORGANISATION OF METALWORKING IN SOUTHERN ENGLAND DURING THE BEAKER PERIOD AND BRONZE AGE

The social organisation of metalworking in southern England during the Beaker period and Bronze Age: absence of evidence or evidence of absence?

by Chris Carey, Andy M. Jones, Michael J Allen and Gill Juleff

<https://doi.org/10.11141/ia.52.4>

This article attempts to consider the social dimensions of metalworking during the Beaker period and Bronze Age in southern England. However, any attempt to discuss the social context of metalworking in these periods, i.e. who was working metals and where these activities occurred, is confronted with an extremely low evidence base of excavated archaeological sites where metalworking is known to have taken place. This lack of data and subsequent understanding of metalworking locations stands in stark contrast to the thousands of Beaker and Bronze Age metal artefacts housed in museum archives across Britain. These metal artefacts bear witness to the ability of people in Beaker and Bronze Age societies in Britain, and particularly southern England, to obtain, transform and use metals since the introduction of copper at c.2450 BC. Such metal artefacts have been subject to detailed analytical programmes, which have revealed information on the supply and recycling of metals. Likewise, there have also been significant advances in our understanding of the prehistoric mining of metals across the British Isles, with Beaker and Bronze Age mines identified in locations such as Ross Island (Ireland), the Great Orme (UK) and Alderley Edge (UK). Consequently, there is detailed archaeological knowledge about the two ends of the metalworking spectrum: the obtaining of the metal ores from the ground and the finished artefacts. However, the evidence for who was working metals and where is almost completely lacking.

This article discusses the archaeological evidence of the location of metalworking areas in these periods and dissects the reasons why so few have been found within archaeological excavation, with the evidence for early metallurgy likely to be slight and ambiguous, and possibly not identifiable as metalworking remains during excavation. Suggestions are made as to where such metalworking activities could have taken place in the Beaker period and Bronze Age, and what techniques can be applied to discover some of this evidence of metalworking activity, to allow access to the social dimensions of early metalworking and metalworkers.

Judith

Judith Winters
Editor, Internet Archaeology
Web: <http://intarch.ac.uk>
Twitter: @IntarchEditor

Facebook: <https://www.facebook.com/internet.archaeology>

[Department of Archaeology, University of York](#) YO1 7EP, UK +44 (0)1904 323955



EΙΔΗΣΕΙΣ - NEWS RELEASE

WHY ALEXANDER THE GREAT MAY HAVE BEEN DECLARED DEAD PREMATURELY (IT'S PRETTY GRUESOME), BY OWEN JARUS

Alexander the Great may have been killed by Guillain-Barré syndrome, a rare neurological condition in which a person's own immune system attacks them, says one medical researchers.

The condition may have led to a mistaken declaration of the king's death and may explain the mysterious phenomenon in which his body didn't decay for seven days after his "death."

Alexander the Great was king of Macedonia between 336 and 323 B.C. During that time, he conquered an empire that stretched from the Balkans to modern-day Pakistan. In June 323, he was living in Babylon when, after a brief illness that caused fever and paralysis, he died at age 32. His senior generals then fought each other to see who would succeed him. [Top 10 Reasons Alexander the Great Was, Well ... Great!]

According to accounts left by ancient historians, after a night of drinking, the king experienced a fever and gradually became less and less able to move until he could no longer speak. One account, told by Quintus Curtius Rufus, who lived during the first century A.D., claims that Alexander the Great's body didn't decay for more than seven days after he was declared dead, and the embalmers were hesitant to work on his body.

Ancient historians reported that many people believed that Alexander the Great was poisoned, possibly by someone working for Antipater, a senior official of Alexander's who was supposedly quarreling with the king. In 2014, a research team found that the medicinal plant white hellebore (*Veratrum album*) could have been used to poison Alexander.

Guillain-Barré syndrome

Based on the symptoms recorded by ancient historians, Katherine Hall, a senior lecturer in the Department of General Practice and Rural Health at the University of Otago in New Zealand, believes that it's possible that Alexander actually died of Guillain-Barré syndrome. The condition, Hall said, may have left Alexander in a deep coma that may have led doctors to declare, mistakenly, that he was dead, something that would explain why his corpse supposedly didn't decompose quickly, noted Hall in her paper published recently in the journal *Ancient History Bulletin*. [Family Ties: 8 Truly Dysfunctional Royal Families]

The syndrome "is an autoimmune disorder where the patient's own immune system has become confused in differentiating between an invading organism, such as a bacteria,

virus, or (very rarely) vaccine products, and the patient's own body," Hall wrote in her paper.

While globally it occurs in, at most, one out of every 25,000 people per year, the incidence rate is higher in modern-day Iraq, particularly during spring and summer, Hall wrote in her paper, noting that Babylon is in modern-day Iraq and that Alexander died in June.

There are several more clues that point to Guillain-Barré syndrome in Alexander's death, Hall wrote. "The most striking feature of Alexander the Great's death is that, despite being extremely unwell, he was reported to have remained *compos mentis* [sane] until just before his death," she wrote, noting that this is something seen in people suffering from Guillain-Barré . The gradual paralysis that Alexander supposedly experienced is also seen in patients with that syndrome.

Reactions

Live Science talked to several scientists not involved with the research who discussed their thoughts on Hall's claim.

It's "an interesting idea" that Alexander was killed by Guillain-Barré syndrome said Hugh Willison, a professor at the University of Glasgow College of Medical, Veterinary and Life Sciences, Institute of Infection, Immunity and Inflammation. "Although from the historical evidence available, it is not possible to establish this with any degree of certainty," he added.

Another professor, Michael Baker, said: "Based on a quick scan [of the article] I think the theory is quite plausible," Baker, a professor in the Department of Public Health at the University of Otago, told Live Science. To say anything more definitive, Baker said he'd need more time to review the paper.

The theory is "very interesting," said Pat Wheatley, a professor of classics at the University of Otago. Hall took some of Wheatley's classes, and the two have been discussing the theory for about a year, Wheatley said. However, Wheatley urged caution when looking at the accounts left by ancient historians, noting that the surviving accounts date to well over a century after Alexander's death, and some of the details may be inaccurate. Still, the "the theory is certainly worth floating," Wheatley said.

Please visit the site: <https://www.livescience.com/64676-alexander-the-great-declared-dead-prematurely.html>

GREACO-ROMAN WINERY DISCOVERED IN EGYPT'S, BY BEHEIRA NEVINE EL-AREF

An Egyptian archaeological mission has uncovered the third section of a Greco-Roman winery and its store galleries surrounded by a mud brick wall at Abu Al-Matameer archaeological site in Beheira governorate.

Adjacent is a residential settlement that was once used by the winery employees.

Mostafa Waziri, secretary-general of the Supreme Council of Antiquities, told Aham Online that the galleries of the winery have a distinct architectural design, with thick mud brick walls of different sizes. Some of the walls bear in their mortar small blocks of limestone that appear to have been inserted randomly.

“These blocks may have been used to achieve the temperature needed to preserve the wine,” Waziri suggested, adding that the wine produced in this area was of high quality and well-known in many parts of the world at the time.

Ashraf Ashmawi, the head of the Ancient Egyptian Antiquities Department, explains that the mission has also unearthed a collection of ovens and instruments including clay pots dating to both the Ptolemaic and Islamic periods. Among those objects are also handles of amphora and fragments of iron.

Ashmawi pointed out that the discovery highlights the strong relationship between Egypt and Greece over the span of history, as some of the artefacts bear stamps from both Greece and Egypt.

Please visit the site:

<http://english.ahram.org.eg/NewsContent/9/41/322489/Heritage/GrecoRoman/GrecoRoman-winery-discovered-in-Egypt-Beheira.aspx>

HAIFA ARCHAEOLOGISTS LOOK TO CRACK MYSTERIOUS 6,500-YEAR-OLD 'TRIANGLE CODE', BY AMANDA BORSCHEL-DAN

A study of basalt vessels shows the ancient bowls found across the Levant were centrally produced, but the discovery of a series of strange markings may point to a deeper meaning

Mysterious triangular marks on hundreds of 6,500-year-old basalt vessels make for a fascinating Stone Age Da Vinci Code. A couple of years ago while hunched over her microscope at the University of Haifa, graduate student Rikva Chasan began to notice on the inside rims of countless stone bowls a plethora of previously undocumented, methodically incised small triangles.

Chasan is working as part of a multi-year international interdisciplinary project conducted by the university's laboratory for ground stone tools research that is tracking the provenance of these basalt vessels across the ancient Levant in order to show socioeconomic changes in the Chalcolithic period, circa 4,500 BCE – 3,900 BCE.

According to Prof. Danny Rosenberg, head of the laboratory for ground stone tools research in the University of Haifa's Zinman Institute of Archaeology, the exploration into the provenance of the basalt vessels will allow the international team to reconstruct ancient trade routes in the ancient Levant and find quarries and production sites.

But in analyzing the "Triangle Code" — as the university press office is cheekily calling the discovery — it appears the researchers have uncovered something more existential.

"The basalt vessels are one lens, one view point in which we can understand the greater picture" of the Chalcolithic period, Chasan told The Times of Israel. It is an era on the seam, sitting between purely stone technology and early copper metallurgy, and the studied vessels were found at Israel Antiquities Authority excavations across a relatively broad swath of the region — from the Negev to the Golan.

Chasan postulates that the clearly coordinated decorations depict the start of a crafts specialization that crossed regional zones. This is a show of interesting broad-strokes cultural cooperation during what is considered a smaller, more "chieftain-level of society," she said, in which the people were early farmers and herders.

"The basalt vessels tie it together... and unite the different communities," she said. The consistently similar decorations provide evidence of "a shared value of the communities," she said, which would have been very isolated from each other.

Chasan, who grew up in New Jersey and moved to Israel 3.5 years ago for graduate school, studied the 6,500-year-old basalt stone vessels for her masters thesis. As she compared examples from different sites, she realized that regardless of where they were

found in prehistoric Israel, the uniformly decorated bowls were incised with small downward-pointing triangles.

Beginning in the 1930s, previous researchers had noted decorations on the basalt vessels, found at hundreds of sites in the ancient Levant — Israel, Jordan, Lebanon, and Syria. But not the shape of them.

According to Rosenberg, the triangles point to a “super-social symbolic structure” which, similar to Jewish law, set behaviors of the Chalcolithic people.

“Like in Judaism, they had rules and conventions they had to follow in terms of the symbols,” he said. Obviously the artisans could have depicted other symbols and shapes — but they didn’t. “They’re all the same size, facing down, nearly always in the inside. There were rules, and they were not just aesthetic rules. What they were for, we don’t yet know.”

What we do know

There are several takeaways from these uniformly decorated vessels: Through residue analysis, there was a clear use for the vessels and they were not just for display, said Chasan.

Unlike their flint counterparts, the basalt vessels were not made at homesteads, but in central places of manufacture. The vessels were then transported to settlements, said Rosenberg, based on a paucity of production debris at dwellings’ excavations.

In Israel, the black-colored stone is found mostly in the Jezreel Valley, the Golan and the Galilee. From evidence at dozens of excavations, the vessels were transported up to hundreds of kilometers — even though the heavy, several-kilogram vessels would have been carried by humans on foot.

According to Rosenberg, animals would not have yet been in the picture for transport. At one site in Beersheba, 10 intact basalt bowls were unearthed, which is the largest cache in the area, said Chasan. She suggested perhaps some of the transportation was done via waterways, but said there is still no evidence.

They were a precious commodity: The process of making the basalt bowls was labor intensive. The material must first be sourced, then carefully shaped with stone tools, during which time it could easily crack, said Rosenberg.

“Not every flint napper can make them... One wrong hit and it’s over,” said Rosenberg. The artisans who created them invested time and effort. And that’s even before adding the decorative triangles.

The small triangles are consistently carved out at a depth of about 1 millimeter and later smoothed out.

“Typically you have in a good Chalcolithic triangle this V-shaped form, and within it are hatches that usually angle from the upper right to the lower left. The number of hatches inside is variable, with an average of ten,” said Chasan.

Chasan attempted to replicate the process of making a similar triangular shape on pre-smoothed basalt stone and found it took about six minutes. “!It’s not the most beautiful triangle anyone’s ever seen,” she laughed, “but if you factor in more skilled craftsmen, it would be a few hours of work for the triangle decorations alone. For the vessel itself, it would be several days’ work,” which could involve several people, she said.

For Chasan, one area of exploration is why would these prehistoric peoples make such labor intensive stone vessels, when pottery was also used during this time and is much less difficult to work. “It is a much faster process, we have clay nearly everywhere, and it can be streamlined: one person can theoretically make the vessel from start to finish,” she said.

Because the stone vessels continued to be produced even after other types of technology could have made them obsolete, “there has to be an element of tradition,” she said. “Even when they don’t need them, they continue making them, perhaps because someone’s ancestors made them,” she postulated.

Across the ancient Levant, these bowls were discovered, often alongside other precious materials such as ivory from hippos or elephants (which were not indigenous in the region at this time), and copper artifacts.

What do the triangles mean?

The symbolic meaning of triangles has been theorized across many cultures, said Chasan. “When people see triangles, they are very quick to jump to fertility,” she laughed, because the vagina is often represented by the shape.

Other suggestions include a clan crest, a seal, or a manufacturer’s mark. But in each culture, she said, the shape holds its own meaning and there’s not one theory she particularly promotes.

University of Haifa PhD student Rivka Chasan in front of a microscope at the lab on January 30, 2019. (courtesy)

“When I started my masters, I was interested in looking at standardization and regional variation to discuss difference in group identity. But there isn’t so much variation [in the triangles] when we look at the entire spectrum. People from Tel Aviv and the Beersheba area have vessels that speak the exactly the same language,” she said.

“They were using decorations that look exactly the same.”

For Chasan, the triangles’ mere existence has meaning alongside their symbolic import.

“The fact that people were making the effort to make this decoration when decoration is not utilitarian, functional, speaks to the fact that the decoration itself serves some function for them,” she said.

In a time of prehistory in which there was no writing, perhaps the diagonal hatches inside the triangles, whose number varied from piece to piece, carried some kind of meaning or were meant to record specific events, she said.

“For me they had to have represented something. It’s not like now where people are wasting time on nothing. There was no Facebook, they weren’t in front of the computer all day. These were busy people doing agriculture. It has to say something to the people there,” she said.

Since the standardized shapes were found from the Negev to the north, it’s clear, said Rosenberg, that the settlements wanted “to be part of a general symbolic world... part of the same general global group.”

However, putting it bluntly, Rosenberg added, “We don’t have a clue why they chose to produce triangles and the diagonal lines. No clue.”

The University of Haifa research of the triangles will be published in an upcoming edition of the academic journal the Bulletin of the American Schools of Oriental Research.

Please visit the site: <https://www.timesofisrael.com/haifa-u-archaeologists-uncover-mysterious-6500-year-old-triangle-code/> [Go there for pix]

OUR BREATH AND SWEAT ALMOST RUINED KING TUT’S TOMB - BUT A NEW CIRCULATION SYSTEM IS MAKING THINGS BETTER, BY JESSICA LEIGH HESTER

WHEN BRITISH ARCHAEOLOGIST HOWARD CARTER cracked into Tutankhamun’s tomb in 1922, he was dazzled by the contents—“Gem-Studded Relics in Egyptian Tomb Amaze Explorers,” The New York Times declared—but he wasn’t especially impressed by its walls. The resting place of the young ruler is humble compared to others in Egypt’s Valley of the Kings—four rooms occupying 9,762 cubic feet, less than a quarter of the size of the burial site of Ramesses V and VI. Conservators have remarked that the paintings on the thin clay plaster covering the rough-cut walls of the burial chamber show numerous drips and other signs of haste; the tomb was likely prepared quickly, since the ruler died young. Carter once characterized the scenes depicting Tut’s funeral procession and the journey of his successor, Ay, as “rough, conventional, and severely simple.”

Tourists haven’t seemed to mind the rush job on the walls—in fact, they have been utterly entranced. Just before the 2011 Egyptian revolution, several hundred people per day squeezed into the confined spaces. Each and every one of those visitors had inconvenient but unavoidable habits: namely, breathing and sweating. In those cramped subterranean quarters, moisture is the enemy.

VISITORS CAN MEAN ALL SORTS of trouble for historic sites. Footsteps can quake fragile, old structures, and people have a tendency to leave behind scribbled musings and wads of gum. Even the lightest-trodding, most respectful visitor presents passive problems. In Tut’s tomb, “visitors increase relative humidity, elevate carbon dioxide levels, and along with natural ventilation into the tomb, promote the entry of fine airborne particles,” wrote researchers, led by the Getty Conservation Institute’s Lori Wong, a wall paintings expert, in a 2018 paper in *Studies in Conservation*.

In partnership with Egypt’s Ministry of Antiquities, Getty conservators just wrapped a nearly decade-long conservation project to guard the tomb against the impact of heavy-breathing, heavy-sweating visitors. (The tomb remained open to the sweaty masses nearly the whole time.) Before they began, the team had to quantify just how bad the problem was. The researchers installed a suite of monitors to track air temperature, relative humidity, carbon dioxide concentration, and other environmental factors. In 2009—the first year of data collection—relative humidity inside peaked at 70 percent in September, one of the desert’s most sweltering months. (Meanwhile, humidity averaged less than half of that just outside the tomb.) The mean temperature indoors hovered around 80 degrees Fahrenheit all year long; National Geographic once described the environment inside as “almost tropical.” It was impossible to pin down the precise levels of carbon dioxide because the air in there routinely maxed out the sensor, which went up to 3,500 ppm—roughly ten times higher than the concentration outside, according to conservators.

It wasn't a pretty picture. Visitors brought in dust that fell like snow on the glass case holding Tut's sarcophagus. On the wall paintings, the dust made the humidity problem more troublesome, because it could "encourage moisture uptake, damaging paint layers, and can cement itself to the surfaces, making it difficult to remove," the authors wrote. Fluctuating humidity levels—seasonally or over the course of a day—can cause the plaster beneath the paint to expand and contract, threatening the integrity of the painted scenes. Carbon dioxide wasn't a concern for the wall paintings, but rather "a serious contributory factor to visitor health and comfort," says Neville Agnew, a specialist at the Getty Conservation Institute and a project leader. Perspiration and respiration were among the main culprits.

DAMP, MUSTY HUMANS HAVE CAUSED problems for painted surfaces around the world. Some 700 years ago, Giotto bedecked the walls of the Scrovegni Chapel, in Padua, Italy, with frescoes. "The frescoes' chief enemies are the excessive number of visitors, which have averaged 350,000 annually in recent years, and the air from outside," architect Gianfranco Martinoni, charged with restoring the works, told the *International Herald Tribune* in 2000. "The moisture emitted by human bodies and breathing combines with airborne dust and other pollutants to produce an acidic chemical reaction that is literally eating into the surface of the paintings."

To protect them, the conservators installed a series of chambers that guests have to pass through before stepping into the chapel. These spaces filter the air and remove dust before it has a chance to blow around and land on the paintings. Conservators at the Sistine Chapel in Vatican City ran with a similar concept when stiff-necked visitors to Michelangelo's 500-year-old paintings neared an astonishing six million a year. The crew did everything from lowering temperatures, to laying down debris-grabbing carpets, to installing vents to "suck dust from clothes and bodies" to keep the damage from human moisture to a minimum, the Vatican Museums' director, Antonio Paolucci, said in 2012. By 2015, the filtration system also helped cut the carbon dioxide by half, Vatican conservator Vittoria Cimino told Reuters.

One tactic for protecting Tut's tomb was to redirect some of the bodies and mouths elsewhere—specifically, to a meticulously fashioned replica of the tomb, a bit more than a mile away. Every nook and cranny was photographed and scanned. "Every bit of micro bacteria is in its place, every crack, every flake of paint," artist Adam Lowe—whose company Factum Arte spent five years assembling the project—told *National Geographic*. "It's effectively like a portrait, or a performance, of the tomb from when we recorded it in 2009."

At the original tomb, to keep the paintings safe, the researchers set a goal to cap the maximum relative humidity at 60 percent, and to limit the daily fluctuation in relative humidity to no more than 20 percent. (A relative humidity range of 40 to 60 percent is often a target for museums, but "we have a different situation," in the desert environment, Wong says.) For visitors' sake, the team aimed to cap carbon dioxide at 1,500 ppm. They were also happy to find that a smattering of potentially worrisome brown splotches turned out to be dead microbes, and weren't a concern in the humid conditions.

To reach these goals, they installed a ventilation system. The machine "supplies filtered 'clean' air at the south end of the visitor platform and then extracts the 'dirty' air at the

north end, thus enveloping the visitors in the antechamber and limiting spread of the dirty air into the burial chamber,” the authors wrote in the 2018 paper. The team saw promising results shortly after it was installed in 2015. By 2016, they were recording relative humidity of 25 percent in the winter and spring, and 29 percent in the summer/autumn—a massive improvement. Daily humidity swings were also less marked.

But, because of the revolution and safety concerns, visitorship was way down, too—from 14.7 million visitors to Egypt in 2009 to 5.4 million in 2016—and this complicated the picture. Tourism appears to be rebounding, though it’s still below previous levels. The ventilation system is designed to handle a steady stream of visitors, but its current successes are products of “a current environment in which reduced visitation has already decreased the moisture and carbon dioxide in the tomb,” the authors wrote.

So what happens as foot traffic picks up? A new viewing platform keeps visitors farther from the wall paintings, and new floors limit the dust people track in. And, if conservators get their way, fewer people will cram into the space at once. In the 2018 paper, Wong and her team recommend no more than 20 visitors at a time, staying for roughly 10 minutes each. (The recommendation “will be refined as data are accumulated,” Agnew says, and the Ministry of Antiquities staff is tasked with managing visitor numbers and monitoring the condition of the tomb.)

In any case, the Getty team doesn’t anticipate an outcry from visitors. A new sign outside describes the impact guests can have on the tomb, and Agnew says that people are sympathetic to its fragility.

“Our experience at other sites indicates that there is acceptance if the reasons for restrictions are made apparent,” Agnew says. Plus, when visitors do get in, they’ll have a good view because the viewing platform “was actually extended further into the burial chamber than previously to provide a better vantage of the wall paintings” while keeping people away from direct contact, Wong says. If you do go, try to play it cool—and maybe let the place take your breath away, at least for a moment or two.

Please visit the site: <https://www.atlasobscura.com/articles/king-tut-tomb-moisture-damage> [Go there for pix]

MODERN CONSTRUCTION IN ROME **YIELDS ANCIENT DISCOVERIES,** **BY CHRISTOPHER LIVESAY**

Work on Rome's new state-of-the-art subway line near the Colosseum has been plagued by delays, but it's also unearthed a surprise treasure trove of thousands of artifacts, including a Roman military barracks and an ancient home with more than a dozen rooms featuring frescoes, mosaic floors, and other decorations that are nearly intact. NewsHour Weekend Special correspondent Christopher Livesay reports.

Read the Full Transcript

Hari Sreenivasan:

There's a big dig going on in the historic heart of Rome, with the goal of creating a new state-of-the-art subway line; and with some of the excavation nearly 100 feet underground, archaeologists are taking advantage of untapped sites that were out of reach before.

The new "Line-C" route may be a modern engineering achievement, but a simple excavation can quickly become an archaeological feast.

PBS NewsHour Weekend Special Correspondent Christopher Livesay has our story.

Christopher Livesay:

The imperial columns, monuments, and temples of Rome's Forum reveal what the city was like 2000 years ago. It's an ancient wonder of the world only discovered in the early 1800s after centuries buried under pastureland. Excavating the Forum took decades and work continues on some areas even today. But big digs like that which uncovered the Forum rarely happen in modern times. Unless it's for something like this, Rome's new subway line, Metro C line, running right by the Colosseum. It's a huge project requiring drilling and digging down deep and wide. Construction workers work side by side with specially trained archaeologists knowing the city's ancient history is buried in the layers of earth beneath them.

Simona Morretta:

This was an extraordinary archaeological opportunity.

Christopher Livesay:

Simona Morretta is an archaeologist with the Italian Government.

Simona Morretta:

The digging of this infrastructure, the Metro C line, gave us the opportunity to reach an excavation depth that normally is never reached. A normal archaeological excavation usually gets to 20 feet.

Instead we were able to go deep down to over 65 feet. This provided some extraordinary archaeological surprises.

Christopher Livesay:

One of those "surprises" came when construction crews came upon this, the ruins of a military barracks and splendid home dating back to the second century AD. Archaeologists expected some kinds of artifacts would be found, but not this.

Simona Morretta:

We found a very-well preserved archaeological complex, which the ancient sources don't say anything about, so it was a surprise also for this reason. It was astonishing indeed, not just the soldiers'

quarters, but also the commander's home, with its frescoes, with the mosaic floors, which are well preserved was indeed exceptional.

Francesco Prosperetti:

The quality of the mosaics especially in the so-called "commadante" house was very good.

Christopher Livesay:

Francesco Prosperetti is Rome's Superintendent of Archaeology.

Francesco Prosperetti:

The most important thing is the dimensions. It is very rare to have the possibility inside Rome to find something that is 1200 square meters.

Christopher Livesay:

1200 square meters. That's 13,000 square feet. But chances are it would never have been found if not for the C-line construction project. It was the biggest find, but not the first. Earlier, at another C-line site close by, San Giovanni, the team had discovered the remains of a farm with sophisticated irrigation systems dating back before Christ. The artifacts are now displayed in a mini-museum inside the station, which opened in May. But combining archaeology with mass transit improvements is not without its problems. It increases the cost and slows construction, the entire C line project is almost 20 years behind schedule. While some locals were frustrated by the delays, the ones we spoke with considered it part of the cost of living in a city like Rome.

Christopher Livesay:

Was it worth the wait?

Woman:

Yes, in my opinion it was definitely worth the wait, especially for this specific stop.

Christopher Livesay:

You're proud to see this in your neighborhood!

Man And Woman:

Si, si.

Francesco Prosperetti:

We were convinced making a station which could show what we are really discovering would convince everybody that it is worth to do this. This was our aim and I still think

that it has been something of a miracle to have the possibility of doing this inside a tube station.

Christopher Livesay:

Prosperetti now has similar plans for the more recent discovery. The commander's home and barracks, with their mosaic floors and frescos, have been removed for safety and restoration. But they'll eventually be reassembled in the same place they were discovered, and displayed inside the new Amba Aradam station, scheduled to open in 2021.

Meanwhile, the digging continues.

Christopher Livesay:

Is there one spot that you have yet to dig where you expect to make even more discoveries?

Francesco Prosperetti:

The center of Rome. Because we are now approaching the very center of Rome, the part that in the Roman times was called Campo Marzio in which all the Republican Imperial Rome was. We have great expectations.

Please visit the site: <https://www.pbs.org/newshour/show/modern-construction-in-rome-yields-ancient-discoveries> [Go there for Audio]

POMPEII: NARCISSUS FRESCO **UNCOVERED BY ARCHAEOLOGISTS**

Archaeologists in Pompeii have announced their latest find on Valentine's Day - a fresco of Narcissus, who loved only himself.

Pompeii, an ancient Roman city in Italy, was buried under volcanic ash when Mount Vesuvius erupted in 79 AD.

The fatal eruption froze the city and its residents in time, making it a treasure trove for archaeologists.

The latest artwork was discovered in the same house where another fresco was uncovered late last year.

The director of the site, Alfonsina Russo, said the "beauty of the rooms" in that discovery had made officials change their plans and search further.

She said it was hoped the house, a wealthy residence near Pompeii's centre, might eventually open to the public.

A press release from archaeologists described the fresco's surroundings as an "elegant and sensual" bedroom.

They said its ceiling had collapsed, but excavators were able to uncover the design of the fresco and find fragments to piece it together.

"The extraordinary discoveries of this site continue," general director Massimo Osanna said in a statement.

"This decoration was intentionally luxurious, and probably dated to the last years of the colony, as indicated by the extraordinary preservation state of the colours," he added.

Who was Narcissus?

In Greek mythology, Narcissus was a hunter - born from the river god Cephissus and a nymph named Liriope.

He was said to be impossibly handsome, but did not pursue any love interest presented to him - leaving behind a trail of devastated suitors.

One was said to have been a nymph named Echo who after being harshly rejected, was left in heartbroken despair. Afterwards she paced alone around nature for the rest of her life, gradually fading to an echo.

As punishment, a deity of revenge was then said to have led Narcissus to a pool of water where he found his own reflection.

He is said to have become so enamoured with himself that he stared at his own appearance until he died.

The mythological figure was very popular within Roman art.

He is also where the term narcissism comes from - meaning an excessive interest in oneself.

It was first popularised as a psychological term by Sigmund Freud in the 20th Century.

Please visit the site: <https://www.bbc.com/news/world-europe-47244338> [Go there for pix]

THE GOLDEN POME: THE POMEGRANATE FROM ITS DEEPEST ROOTS TO MODERN CULTURE, BY FEDERICA SPAGNOLI

At the end of summer, before the winter cold arrives, pomegranates ripen. The antioxidant, anti-inflammatory, and anti-aging properties contained in its juice and skin make this fruit an important prophylaxis. The pomegranate has always been a symbol of seasons and of health, associated with the divine power to regenerate life, often appearing as an attribute of deities such as Ishtar, Astarte, Hera, Demeter, and the Virgin Mary.

The pomegranate is attested in ancient Elam during the 4th millennium BCE, and then spread to the rest of the Near East, with the original shrub (*Punica protopunica* L.) reaching Mesopotamia, Anatolia, Syria, and Palestine by the end of the 3rd millennium. Sumerians appear to have been involved in domestication of the pomegranate (*Punica granatum* L.), and the fruit quickly became an important symbol.

The brilliant red and yellow of the pomegranate's skin, the blood-red juice, and its healthy properties create associations with human fertility, and thus life and death. In ancient Mesopotamian art pomegranates are often represented with the deities of fertility, fecundity, and abundance.

Pomegranate seeds were found in the principal cities of the 3rd millennium BC Syria-Palestine, such as Ebla and Jericho, and the spread of pomegranate in the Levant continued during 2nd millennium BCE.

The recovery of numerous pomegranate seeds, skin fragments and flower parts from the late 14th century BCE Uluburun shipwreck, a Syrian cargo ship sunk near the southern coast of Anatolia, confirms that the pomegranate was a luxury item used by urban elites. The spread of the pomegranate plant and its religious symbolism and use in 14th century BCE Cyprus and Aegean is probably due to Canaanite and Syrian trade.

By the beginning of the 1st millennium BCE, the pomegranate is found especially in funerary contexts in the Levant, and it also achieves further symbolic value connected to kingship. Its image continued to be reproduced on textiles, wood, ivory, precious metals, as well as in symbolic ornaments.

The Bible provides several interesting references to pomegranates (Hebrew *rimmon*). The earliest is in the Book of Exodus (28:33-34 and 39:24-26) and refers to tying blue, purple and scarlet yarns in the shape of pomegranates, which alternated with golden bells, to embellish the hem of a priestly robe. Similar decoration had been used on Near Eastern elites' robes since the 2nd millennium BCE, as can be seen on Old Syrian and Old Babylonian royal statuary. The same kind of decoration might be detected in modern fringes, like those of the *kheffiyeh*. The pomegranate is listed among the fruitful plants of the Promised Land in the Book of Deuteronomy (8:8-7), and garlands of bronze pomegranates encircled the top of the pillars flanking the entrance of Solomon's Temple in Jerusalem built by Phoenician architects and artisans (1 King 7:18-20).

During the 2nd millennium BCE, the pomegranate was an exotic fruit for urban aristocrats of the Near East and was exchanged as a luxury item, but it also had strong symbolic value both in the sacred and funeral spheres. The same symbolism was transmitted to Greek culture at the beginning of the 1st millennium BCE.

Even though the pomegranate tree was already cultivated in Greece, in the local literary tradition it continues to be regarded as coming from far off territories and mythical places. For example, the *Odessey* relates that in the luxuriant garden of the palace of Alcinous King of the Phaeacians, the pomegranate is one of the fruit trees, along with pears, apples, figs and olives, that bears fruits all year round. The pomegranate is also the fruit of the netherworld in the myth of Demeter and Persephone/Kore. In 7th and 6th century BCE the pomegranate appears as a standard element of Greek aristocratic tombs, both as a grave good or depicted on funerary vases.

The pomegranate is represented as an attribute of the goddesses Hera, Artemis, and even Athena. In Greek culture, the pomegranate was thus the symbol of deities responsible for nature and the reproduction of human, animals, and plants.

In Minoan and Mycenaean traditions the pomegranate is linked to the cult of the Meteres, the ancestral deities of nature and fertility. These concepts are later transmitted in Greek mythology to Demeter, the goddess of nature and the harvest, and to her daughter Persephone. The pomegranate has a central role in the mythologies of these goddesses; it is the element that links with Hades, triggering Persephone's reappearance on earth, and thus indirectly, the cycle of the seasons. The pomegranate blooms at the beginning of the summer and its fruits ripen by the autumn, matching the return of Persephone to Hades and the lethargy of winter.

The pomegranate represents the seasonal passage and the seasons of human life.

But pomegranates also symbolize renewal and rebirth. In Mycenaean and later Greek mythology, Hera, wife of Zeus, receives a tree of golden pomes (μῆλη), probably pomegranates, which gave the gift of immortality, guarded by the nymphs Hesperides at the Western border of the world. The pomegranate is one of the most common attributes of Hera in Western Mediterranean, especially in Southern Italy, where the goddess was widely worshipped.

It is probable that the diffusion of the pomegranate in the western Mediterranean is due to Phoenician expansion around the 10th century BCE, with Phoenician colonists carrying the fruit, and its symbolism to Sicily, the Iberian Peninsula and North Africa, and then to the Etruscan and Roman worlds.

One of the earliest attestation of the pomegranate in Sicily is from an 8th century BCE cultic context at Motya.

Motya (Sicily), fragment of a terracotta plaquette representing a female hand holding a pomegranate, found in the sacred Area of the Kothon (5th century BCE).

Pomegranates are so far absent in 7th and 6th century Phoenician tombs in Sicily but are widespread in the 5th century as both funerary goods and iconography.

Over millennia, from the Near East to the western Mediterranean, the pomegranate had a major role in the economy and symbolic life of different cultures. Along with grapes and figs, pomegranates became central fruits of Levantine, Aegean, and Mediterranean societies, as well as common symbols of rebirth and fecundity. The pomegranate was also considered a divine fruit connected with power, passing from the hands of gods to kings. Phoenicians and Carthaginians played a central role transmitting the fruit and its Near Eastern meanings to the West, and at the same time merging them with ideas from the Aegean. The golden pome thus became a symbol of health, prosperity and power that continues until today. The sanctuary of the “Madonna del Granato” at Capaccio near Salerno was erected on a Temple of Hera. There, the Holy Mary is portrayed in a painted statue replicating the sacred gesture of the ancient Greek deity.

This association appears throughout Medieval and especially Renaissance art, epitomized by Botticelli’s “Madonna della melagrana” and the sumptuous image of Princess Eudoxia decorated with pomegranate blossoms from the end of the 15th century CE.

Pomegranates continue to appear in contemporary art, such as Salvador Dalí’s 1944 painting “Dream Caused by the Flight of a Bee Around a Pomegranate a Second Before Awakening,” where the fruit once again represents the return to life after a peaceful sleep.

Federica Spagnoli is a faculty member in the Istituto Italiano di Studi Orientali – ISO at Sapienza Università di Roma.

Please visit the site: <http://www.asor.org/onetoday/2019/02/Golden-Pome> [Go there for nice pix]

A PTOLEMAIC WORKSHOP FOR BOAT CONSTRUCTION AND REPAIR HAS BEEN UNCOVERED IN THE SINAI PENINSULA, BY NEVINE EL-AREF

Excavations carried out by an Egyptian mission at the Tel Abu Seify archaeological site in Northern Sinai uncovered the remains of a limestone building that was once a workshop for the construction and repair of boats and vessels during the Ptolemaic and Roman periods.

The site is said to have been the location of the Roman fortress of Silla.

Mostafa Waziri, secretary general of the Supreme Council of Antiquities, said that the workshop includes two dry dockyards where ships were built or repaired. But regrettably, along the span of time as the workshop lost its function, after the Nile branch passing across the area dried up, some blocks of the workshop were removed to be used in the construction of other buildings.

Remains of wooden beams, shipwrecks, bronze and iron nails of different sizes, fish bones and clay pots were found inside the workshop.

Please visit the site:

<http://english.ahram.org.eg/NewsContent/9/41/325517/Heritage/GrecoRoman/Ancient-workshop-for-construction-of-boats-uncover.aspx> [See also
<http://www.israelhayom.com/2019/02/13/archaeologists-discover-ancient-workshop-in-egypts-sinai/>

ARCHAEOLOGIST FINDS NEW EVIDENCE OF THE ROMANS WHO ESCAPED MT. VESUVIUS, BY KRISTINA KILLGROVE

The plaster casts of Romans killed when Mt. Vesuvius erupted in 79 A.D. are internationally famous, but scholars have long known that more people escaped the volcano's destruction of the Bay of Naples than were suffocated by it. New evidence from inscriptions provides clues to where these refugees settled.

In a forthcoming open-access article in the journal *Analecta Romana*, archaeologist and historian Steven Tuck of Miami University explains how his creation of a database of Roman last names led him to match up records from Pompeii and Herculaneum with records from the parts of Italy unaffected by the destructive power of Vesuvius. Tuck's goal in doing this work was not just to identify refugees but also "to draw conclusions about who survived the eruption, where they relocated, why they went to certain communities, and what this pattern tells us about how the ancient Roman world worked socially, economically, and politically."

In order to find refugees, Tuck needed to investigate inscriptions on public buildings and tombstones, because historical records only emphasized the physical damage of disasters. This may seem odd to us today, as our news reports tend to center the loss of human life as the main result of a catastrophe, but in Roman times only a handful of narratives, such as Pliny the Younger's account of his famous uncle's death near Pompeii, reflect the human toll of these ancient natural disasters.

Tuck created a method for identifying refugees based on several lines of evidence, including: last names that were common in cities near Vesuvius and that show up elsewhere after 79 A.D.; specific inscriptions that list a person's origin at Pompeii or indicate they were born elsewhere; artifacts or cult objects characteristic of Pompeii or Herculaneum that were found in other places after the eruption; and new public infrastructure that may have been built to accommodate a refugee community.

"I looked for names at Pompeii that were prominent in the later years of the city and inscriptions that were as near as possible post-80 A.D. in the 'refuge communities'" elsewhere in Italy, Tuck explains. As an example, there are six people from the family Caninia known from 2nd century A.D. inscriptions at Neapolis (modern Naples). That last name appears earlier at Herculaneum but essentially nowhere else, suggesting the family moved because of Vesuvius.

Tuck makes an even stronger connection, though, for a particular member of this family: Marcus Caninius Botrio, whose name is recorded in the *Album of Herculaneum*. It is likely that Botrio "is the best surviving evidence of a specific individual from Herculaneum who resettled at Neapolis as a refugee, and then died there as attested by his tomb inscription," Tuck notes.

Another example Tuck presents comes from Roman Dacia, an area of the Empire that is now Romania and Serbia. On a tombstone there dated to 87 A.D., an inscription lists one

Cornelius Fuscus, who was a citizen at Pompeii, lived at Neapolis, and was stationed in Dacia as a praetorian prefect who led five legions in Domitian's war. Fuscus "seems to have resettled from Pompeii to Neapolis after the eruption," Tuck concludes.

Although most inscriptions that survive today reference men, who were the leaders of the patriarchal Roman society, Tuck found an example in Naples of a woman named Vettia Sabina, whose husband set up her late 1st century A.D. tombstone. "That inscription contained the Oscan 'Have,' the only use of it found at Neapolis, while it is recorded repeatedly at Pompeii in inscriptions and graffiti," Tuck notes. 'Ave' is the Latin word for 'hail' or 'farewell' and is familiar to Catholics in prayers and songs like Ave Maria. But 'have' reflects the influence of a language called Oscan, which was similar to Latin and spoken in the south of Italy until the 1st century A.D.

Tuck's combination of history and archaeology has produced strong evidence that it is possible to trace Vesuvian refugees. He finds that many refugees settled on the north side of the Bay of Naples, and that families tended to move together and then to marry within their refugee community. These people probably "represent either those who fled at the first sign of the eruption," Tuck says, "or those who were away from the cities when the eruption occurred." But while this method seems to work for identifying reasonably wealthy citizens, Tuck knows that it is limited because it cannot help him discover non-Romans, slaves, or migrants who escaped Vesuvius.

In the end, Tuck finds it important to note the Roman government's reaction to Vesuvius. While in the contemporary U.S., our governors or president immediately declare a state of emergency and work to help people affected by a natural disaster, the Roman government didn't react until after people were resettled. Once refugees had moved, though, the emperor earmarked money to build new infrastructure in communities like Naples and Pozzuoli to accommodate the influx of people.

"The evidence presented makes it clear that we can now answer the questions of whether anyone survived the eruption of Vesuvius from Pompeii and Herculaneum and where they resettled," Tuck concludes.

"How many refugees escaped is a question that cannot be answered with any certainty; the evidence simply is not good enough to allow for anything like accurate counts."

Tuck's work, though, combined with bioarchaeological evidence from the skeletons of people who were trapped by Vesuvius, and with biochemical evidence in the form of isotope and ancient DNA analysis, paves the way for a fuller understanding of this catastrophic natural disaster and its ramifications on the Roman people.

Kristina Killgrove is a bioarchaeologist and science communicator. For more ancient news, follow her on Twitter (@DrKillgrove), Instagram (PoweredbyOsteons), or Facebook (Powered by Osteons).

Please visit the site:

<https://www.forbes.com/sites/kristinakilgrove/2019/02/19/archaeologist-finds-new-evidence-of-the-romans-who-escaped-mt-vesuvius/#4a786aac64d8> [Go there for pix]

CHEMICAL ANALYSIS REVEALS ORIGIN **OF POMPEIAN MOSAIC TILES,** **BY EMMA STOYE**

Two Roman mosaics in the ancient city of Pompeii have been analysed by heritage scientists who used portable spectrometers to reveal what the different coloured tiles are made of. The materials they identified include reddish iron minerals and pieces of solidified lava from nearby Mount Vesuvius. The findings, the researchers say, will help ensure these 2000-year old artworks can be preserved in their original setting.

A team led by Iker Marcaida from the University of the Basque Country in Spain looked at two mosaics in one of the most important sites in Pompeii, the House of Gilded Cupids, a lavishly decorated villa that once belonged to a wealthy family. The house is known for its well-preserved wall paintings, mirrors and shrines, as well as floor mosaics featuring black, white, orange and red tiles.

The researchers say working out the composition of individual cube-shaped tiles – known as tesserae – is ‘an interesting challenge from a chemical and archaeological point of view’, particularly as it is not possible to remove samples from the site for laboratory analysis.

They used portable instruments to carry out Raman, x-ray fluorescence and diffuse reflectance infrared Fourier transform spectroscopies to determine the elemental composition of different tiles. The black tiles were shown to be rich in metals such as aluminium, silicon, potassium and iron due to the presence of minerals such as diopside, feldspar and leucite. Their composition was typical of black volcanic rock, which would have been readily available to Pompeian craftsman at the time given the proximity of Vesuvius.

The white, orange and red tiles were all found to be composed mainly of calcite, a calcium carbonate mineral. However, the red and orange tiles contained higher levels of iron, suggesting they were coloured by adding a layer of the reddish iron oxide mineral haematite over the calcite. The team used laser induced breakdown spectroscopy (Libs) – a technique which can measure the depth profile of different elements in a specimen – to measure the thickness of the coloured layer.

Archaeological chemist Rachel Popelka-Filcoff from Flinders University in Australia says the study stands out for its use of non-destructive techniques. ‘The use of Libs, while technically minimally destructive to the object, provides further information on the layering of the pigments and depth of surface layers. Often this can only be accomplished by cutting thin sections or other destructive methods,’ she tells Chemistry World. She adds that the work is important because a thorough understanding of the materials is needed to ensure the right treatments and techniques are used to preserve them.

‘Tesserae and mosaics are one of the long-standing class of materials that remain from the Greeks and Romans and offer an unprecedented look into the past,’ Popelka-Filcoff

notes. ‘Conservation science has many diverse and effective treatments, but a fundamental understanding of the material is vital.’

The analysis did identify some signs of degradation in the white tiles, detecting the presence of gypsum (calcium sulfate dihydrate) which may have formed as a result of acidified rainwater reacting with the calcite. Marcaida and colleagues point out that, as gypsum is soluble, ‘extreme care’ now needs to be taken to prevent the tiles dissolving.

References

I Marcaida et al, Heritage Sci., 2019, DOI: 10.1186/s40494-019-0246-1

Please visit the site: <https://www.chemistryworld.com/news/chemical-analysis-reveals-origin-of-pompeian-mosaic-tiles/3010127.article>

UNDERWATER ARCHAEOLOGISTS FIND SURPRISING ARTIFACTS FROM MAJOR ROMAN NAVAL BATTLE, BY OWEN JARUS

Archaeologists exploring the site of a naval battle fought 2,200 years ago between Rome and Carthage have uncovered clues to how the battle may have unfolded — as well as several mysteries.

The finds suggest that Carthage reused captured Roman warships during the battle and that Carthaginian sailors may have thrown cargo overboard in a desperate attempt to help their ships escape the Romans.

According to historical records, the naval battle occurred on March 10, 241 B.C., near the Aegates Islands, not far from Sicily in the Mediterranean Sea. In the battle, a Carthaginian fleet that had been trying to bring supplies to one of Carthage's armies in Sicily was intercepted by the Roman navy, which proceeded to destroy much of the fleet. The victory was so resounding that Carthage was forced to sue for peace, agreeing to terms that favored Rome. [10 Epic Battles that Changed History]

Over the last decade, underwater archaeologists have been surveying the battle site, finding the remains of bronze rams, metal helmets and pottery containers. The 2018 season alone resulted in the discovery of six rams as well as several helmets and pottery vessels.

Carthage fought with Roman ships

Carthage seems to have fought the battle with a fleet that partly consisted of captured Roman ships. "Of the 19 securely known rams from this area, I believe 11 of them are securely identified as Roman rams," said team member William Murray, a professor of Greek history at the University of South Florida. Additionally, the type of design on many of the helmets found at the site is one that archaeologists call "Montefortino." The helmet design was so popular with the Romans that they decorated some of their rams with images of the helmets.

The discovery of numerous Roman rams and Montefortino-type helmets leaves archaeologists with a dilemma. "You would expect that the Carthaginians, who lost the battle, would have suffered the most casualties," said Murray, noting that you would also "expect that most of the warship rams would belong to Carthaginian-manned warships."

Carthage likely used ships that they had captured from the Romans in a previous naval battle, said Murray, who added that historical records say that in one battle, which occurred several years before the Aegates Islands battle, Carthage captured 93 Roman ships. [What Was the Most Pointless Battle in History?]

Why there are so many Montefortino helmets is a bit of a mystery. One explanation is that the Carthaginians hired mercenaries from Gaul and Iberia and used them to crew many of their ships in the fleet, Murray said. Soldiers in those areas sometimes used Montefortino helmets.

Did Carthage's sailors dump cargo overboard?

They also found several amphorae — a type of pot often used to store liquids — scattered around the remains of the Roman ships. This is odd, since any pots that went down while being stored within a ship should have been clustered together, Murray said.

"It's as if they were jettisoned out into the sea, and they separated one from another and then sank to the seafloor," Murray said. One possible explanation is that, at some point in the battle, Carthaginian sailors realized that their mission was not going to succeed and jettisoned the cargo (supplies meant for the Carthaginian army in Sicily) in an attempt to make their ships lighter and faster, making it easier for them to flee from the Roman fleet, Murray said.

Wasting food

In addition to being widely dispersed, "none of the amphora are lined with a tar-like substance" that prevents liquid from evaporating while it is being stored, Murray said. This means that any liquids inside would have partly evaporated by the time the pots had reached Sicily.

Consequently, even if the Carthaginian fleet had reached Sicily, part of the cargo would have gone to waste. While amphorae could also be used to store grain, ancient depictions of cargo being taken off ships indicate that grain was more commonly put into sacks, he said.

Perhaps the Carthaginians were so desperate to bring supplies to their army that they didn't have time to line the amphorae, Murray said.

Another possibility, he said, is that the Carthaginians didn't have any sacks available and decided to use amphorae instead to bring dry goods to Sicily. Scientists are in the process of performing chemical tests to try to determine what the containers held, according to Murray.

Murray and other members of the team presented their findings in a paper presented at the joint annual meeting of the Archaeological Institute of America and the Society for Classical Studies held in San Diego between Jan. 3 and 6. The project to survey and excavate the underwater site is being conducted jointly by the Sicilian Soprintendenza del Mare and RPM Nautical Foundation and involves scientists from several other institutions. Another field season is being planned for 2019.

Please visit the site: <https://www.livescience.com/64734-underwater-rome-carthage-battle-artifacts.html> [Go there for pix]

HOW WAS IRON SMELTED IN ANCIENT ISRAEL? RESEARCHERS BUILD KILNS TO FIND OUT, BY NIR HASSON

The transition from the Copper Age to harder iron tools was a turning point for the ancient Hebrew kingdoms, but we don't know quite how they did it

The Iron Age was a turning point in the history of the Land of Israel.

Iron tools began to appear around 3,000 years ago, gradually supplanting the softer copper and bronze tools. It was also a time of dramatic political change, as the Hebrew kingdoms, Judah and Israel began to take shape, which may or may not have to do with the advent of iron.

However, it has never been quite understood how the ancients actually produced their iron.

Regarding the copper that preceded iron, archaeologists know where it was mined and smelted, thanks in no small part to advanced chemical analysis. It has even been proved, for example, that Cyprus was a key source of copper for the northernmost corners of Europe thousands of years ago

That can't be said for iron. Excavations around Israel have unearthed the rusted remains of ancient iron tools and in some places, slag from iron production as well. But the scientists know little about where the iron ore was mined, how the iron-bearing ore was processed as a raw material, and how it was then smelted.

However, there are only so many ways the people in Judah and ancient Israel could have generated temperatures high enough to extract the iron from ore, and last week Dr. Adi Eliyahu of Ariel University set out to recreate the long-forgotten process.

Using the means that could have been available at the time and common sense, Eliyahu – who studied chemistry and archaeology at the Weizmann Institute in Rehovot – and her colleagues set out to make iron the old way.

The first stage was to gather iron-rich rocks, which was done from two streams in the Negev, Nekarot and Paran. Rocks with iron can be identified by their reddish hue.

The next stage was to heat the rocks in an open fire, which reached a temperature of about 500 degrees Celsius. Then the hot rocks were pulverized into fine gravel, which was placed into a tall, narrow kiln, made of strong clay, together with coal.

The kiln had an opening for ventilation. At its bottom, this crude furnace could reach a temperature of 1,300 degrees.

It is true that the researchers gave themselves some wiggle room.

Their predecessors in smelting 3,000 years ago definitely didn't use electric bellows and hair dryers to create air flow. They would have used slaves or workers wielding bellows made of leather.

But aside from that, the process Eliyahu created was apparently similar to how iron was made in days of yore.

After about four hours of burning ore, occasionally adding more and feeding the kiln more coal as needed, an opening was made in the bottom of the furnace to let out molten slag.

Inside the belly of the kiln was a lump of iron, ready to be worked into tools or whatever. It was rather like a birth, Eliyahu says.

Thirty-five kilos of ore produced seven-and-a-half kilos of iron.

One of the team members is Lee Sauder, an American researcher who produces iron using ancient technologies. In a separate workshop, he made a small knife using the smelted iron. Meanwhile, Jake Keen of Britain built a variation on the design of the iron foundry, which was operated by three hair dryers.

It bears stressing again that both these recreations of iron production techniques are educated guesses, no more.

Not one single ancient facility to make iron has been discovered in Israel. One theory is that this is because the ancient furnaces were used exactly once: they would be destroyed in order to extract the purified iron from their insides.

That is just theory, for now. Meanwhile, Eliyahu is just happy that she managed to produce iron from three types of ore fed to the furnaces. Other ores will be tried later, and ultimately she hopes the project will teach us more about ancient iron production in Israel.

“This idea is to go through all the stages in the process, from the raw material to the final product, so that we can build calibration tables in order to characterize findings and say where they came from,” she says.

She hopes that the research will shed light on how iron tools could have been made in antiquity, and also on why there are differences between the iron tools found at different sites. Ultimately, the hope is to build a database that can facilitate the identification of the ancient tools found around Israel.

Her research, which is being done with Naama Yahalom and Yigal Harel of Hebrew University of Jerusalem and others, is supported by the Israel Science Foundation. The kilns were built in the yard of a house in Moshav Kidron, near Gedera. “There are still many open questions and we aren’t getting answers for everything, but meanwhile it looks promising,” she says.

Please visit the site: <https://www.haaretz.com/archaeology/.premium.MAGAZINE-how-was-iron-smelted-in-ancient-israel-researchers-build-kilns-to-find-out-1.6942156>

5TH CENTURY GREEK INSCRIPTION FOUND AT SITE OF ANCIENT SAMARITAN REBELLION, BY AMANDA BORSCHEL-DAN

Rare mosaic attests to the 1,600-year-old holdings of wealthy landowner ‘Master Adios’ in the heartland of a Samaria at war with the encroaching Christian empire

A salvage excavation ahead of the construction of a new neighborhood in the central Israel village of Tzur Natan has unearthed rare written evidence of much earlier occupation — 1,600 years earlier — when the agriculturally fertile area was racked by turmoil and rebellion.

Just outside an ancient wine press in the small southern Sharon Plain settlement, the Israel Antiquities Authority team discovered a well-preserved Greek inscription from the 5th century recording a blessing for one “Master Adios.”

According to Prof. Leah Di Segni of the Hebrew University of Jerusalem, who deciphered the inscription, the short inscription reads, “Only God help the beautiful property of Master Adios, amen.”

Archaeological and historical evidence point to Adios as being a wealthy Samaritan landowner. Previous excavations at the site have also uncovered an ancient Samaritan synagogue that was converted into a church in the 6th century — just after the height of the Samaritan settlement in the region.

Preservation work on the 1,600-year-old inscription and wine press unearthed at the home of a wealthy Samaritan in Tzur Natan. (Galeb Abu Diab/Israel Antiquities Authority)

The current excavation, which ended this week, was conducted on behalf of the Israel Lands Authority and headed by Dr. Hagit Torge, who has dug there previously. In addition to the wine press and inscription, her team discovered “stone quarries with rock-cut depressions used for cultivating grapevines, apparently part of Master Adios’s estate,” according to the IAA press release.

“The inscription was discovered in an impressive winepress that was apparently part of the agricultural estate of a wealthy individual called Adios. This is only the second such winepress discovered in Israel with a blessing inscription associated with the Samaritans. The first was discovered a few years ago in Apollonia near Herzliya,” said Torge.

Master Adios would have been an elite member of the society, said Torge. “The location of the winepress is near the top of Tel Tzur Natan, where remains of a Samaritan synagogue were found with another inscription, and reveals Adios’ high status,” said Torge.

1,600-year-old inscription and wine press at the home of a wealthy Samaritan was unearthed at Tzur Natan. (Yitzhak Marmelstein/Israel Antiquities Authority)

The current excavation adds insight into a previous well-documented one conducted by the Texas Foundation for Archaeological & Historical Research (TFAHR) Tzur Natan in 1989-1994. The TFAHR dig concentrated on a Samaritan agricultural-industrial complex, which was home to a donkey-mill for grinding wheat that the IAA release states was incised with a seven-branch candelabrum, and the aforementioned synagogue that was later converted into a Christian monastery and church. According to the detailed excavation report on Tzur Natan, or ancient Antesion, there is ample evidence of agricultural activity in the region for millennia.

The erosion of the bedrock creates soil that is “especially good for vines and olives,” according to the report. Nearby is an ancient water source, the Springs of Dardar, which has aided the region’s continuous settlement since the pre-Neolithic period (see this 2007 excavation report) through the Ottoman era, during which the tomb of Sheikh Musharaf was constructed and other graves were dug around it (see the 2016 report). The current Tzur Natan settlement was founded in 1966 and is very close to the Green Line, or the de facto border with the West Bank.

Located a mere 18 kilometers from the Mediterranean coast, there was noted settlement activity at Tzur Natan during the Iron Age (10th-7th centuries BCE), in which two small villages were inhabited in the area and left remains of wine and olive presses. Later, during the Roman and Byzantine eras (2nd-5th centuries CE), the area was heavily cultivated. At that time some 120 wine presses, 50 olive presses, 50 cisterns and multitudes of agricultural terraces were noted in the region, according to the 1994 report.

“These groups were repeatedly found every 100-200 meters... It was thus concluded that in this period the settlement was inhabited by farmers who own their own land and cut their own installations into their individual plots,” states the 1994 report. And the people who settled this land, were the Samaritans, found the Texas team’s archaeologists.

According to TFAHR archaeologist and historian Dr. William J. Neidinger, the Samaritans’ historical origins are not completely clear. One school of thought says they were brought to the Land of Israel by the conquering Assyrians. Another portrays them as peoples living in Israel during the time of the Assyrian conquest, who intermarried with Israelites who were not expelled, and began to worship the same God in a slightly different manner.

The animosity between Jews and Samaritans is clear in the historical record, however, according to Neidinger. Few Samaritans participated in the Jewish Revolt against the Romans (which ended in the destruction of the Jerusalem Temple), and none joined the Second Jewish Revolt (132-35). Following the second uprising, in fact, Samaritans often were granted or occupied land from which Jewish farmers were expelled.

The Samaritan community prospered through the 3rd and 4th centuries, until the rise of Christianity during the Byzantine era, which spelled the beginning of the end for the community. Today it only has a small foothold, at Mount Gerizim and in Holon.

Preservation work on the 1,600-year-old inscription and wine press unearthed at the home of a wealthy Samaritan in Tzur Natan. (Galeb Abu Diab/Israel Antiquities Authority)

After religious persecution and desecration of their holy sites, the Samaritan community embarked upon a series of rebellions that began in 415 CE and continued off and on until 636. According to Neidinger, the most serious rebellion was in 529, which is noted in the annals of the historian Procopius.

A rebellion, states Neidinger, requires capital as well as willing, armed men. That riddle was probed during the Texas team's excavation at Tzur Natan, which gave insight to the potential wealth amassed by the Samaritan community, he wrote.

The newly discovered estate, wine press and inscription in praise of a wealthy lord, add a further layer of understanding to the Samaritan culture of this "rebellious era," some 1,600 years ago.

Please visit the site: <https://www.timesofisrael.com/5th-century-greek-inscription-found-at-site-of-ancient-samaritan-rebellion/> [Go there for pix]

KING TUTANKHAMUN’S TRUMPETS ONCE ENCHANTED AN AUDIENCE OF MILLIONS—BUT IT NEARLY RUINED THE PRECIOUS ARTIFACTS, BY ERIN BLAKEMORE

The trumpeter held the silver instrument to his lips. This was no ordinary trumpet: It had been retrieved 17 years earlier in the tomb of King Tutankhamun, a 14th-century B.C. pharaoh whose lavish sarcophagus and funeral remains had stoked a worldwide fascination with all things Ancient Egypt.

It was supposed to be a magical moment: The bandsman, an expert trumpeter, had been entrusted with helping sound King Tut’s trumpets for the first time in 3,000 years.

Then, as he held the silver instrument to his lips, it fell to pieces.

It was a disaster—and just part of the long tale of King Tut’s trumpets, a set of instruments that survived millennia only to become a source of 20th-century fascination. The trumpets now sit silent in the Egyptian Museum in Cairo. But in 1939, they were part of a bold experiment that brought history and radio together.

The instruments, one of silver and one of bronze and copper, had been discovered in King Tut’s tomb in 1922 by Howard Carter, the archaeologist who became a household name after he discovered the boy king’s tomb in the Valley of the Kings. Though the world was in the midst of a massive interest in archaeology and antiquities, it had never seen anything like the riches found in the perfectly preserved tomb: lavish artwork, the king’s gold- and jewel-encrusted sarcophagus and mummy, and two trumpets that were part of a much larger collection of funerary objects found in the tomb.

The discovery immediately became international news. It was the beginning of “Tutmania,” a cultural onslaught that overtook newspaper pages and overshadowed the concerns of Egypt, a newly independent nation that had only just shaken off British rule. The Western public was curious about all aspects of the tomb and its significance, especially as images of the immensely valuable cache made their way to Europe and the United States.

Disaster Unfolds During a Rehearsal News that the find included two trumpets intrigued Rex Keating, a BBC radio announcer known as a pioneer in the areas of radio documentary. In 1939, he approached archaeologists and curators about the idea of using the trumpets on a radio broadcast that would highlight the King Tut research and let the world, in his words, “cross the gulf dividing us from ancient Egypt, and for a few seconds breathe life into her dead bones.”

The request caught officials off guard. But lured by the promise of radio and the possibility of hearing the instruments played by a professional, they agreed.

A British Army bandsman was chosen to play the trumpet and began practicing. Keating wanted him to try to play a melody, but as he improvised it caused “ear-splitting discord.” The trumpets hadn’t been designed to play multiple notes, but Keating was determined to let the world hear them. In an attempt to play the instrument, the man shoved a modern mouthpiece onto the instrument, causing the brittle silver to shatter.

It was a disaster. The bandsman was reassigned and, as Keating claims in his memoirs, Alfred Lucas, a member of the original archaeological expedition who was to be interviewed during the radio program, was so distraught he had to go to the hospital.

But the instrument was repaired. The performance went on as scheduled. This time, the musician was James Tappern, a British Army bandsman who played a haunting melody on both trumpets. Though he also used a modern mouthpiece to sound the trumpets, the earlier accident was not repeated.

The trumpets are still at the Egyptian Museum in Cairo. They were originally used to announce the king’s arrival and were believed to banish bad spirits, writes art historian Mey Zaki. The lavish illustrations on the instruments’ sides show religious iconography; the gold and bronze trumpet shows the king receiving the key of life from Amun-Ra, the sun god.

The use of the trumpets is a matter of debate. Zaki thinks its purpose was to rouse the king for the millions of jubilee festivals the pharaohs expected to celebrate in the afterlife. Musicologist Percival Kerby speculated that they were military trumpets that would have been used to call King Tutankhamun’s troops to order and direct their movements during battle.

The trumpet has also been the subject of superstitious speculation. In 2011, Hala Hassan, one of the Tutankhamun collection’s curators in Egypt, suggested that whenever someone blows the trumpet, war breaks out.

“A week before the revolution, during a documenting and photographing process, one of the museum’s staff had blown into it and a week after revolution broke out,” writes Nevine El-Aref for Ahram, Egypt’s largest daily newspaper. “The same thing had happened before the 1967 war and prior to the 1991 gulf war, when a student was doing a comprehensive research on Tutankhamun’s collection.” And later in 1939, after the BBC radio broadcast, war broke out in Europe when Nazi Germany invaded Poland.

Superstitions Around King Tut's Trumpets Conflict is linked to the trumpets in another way: In 2011, one of the trumpets disappeared during the Egyptian revolution. In January 2011, as student protests raged outside the Egyptian Museum in Cairo, the trumpet was stolen along with other artifacts from Tutankhamun’s tomb. It was returned a few months later, undamaged.

The 1939 performance would be the last of its kind. But it wasn’t the end of the world’s obsession with ancient Egypt—a preoccupation that brought past and present together. When King Tutankhamun’s relics toured the world in the 1970s, millions of visitors fell under the boy king’s spell all over again. Since then, the artifacts from his tomb have remained in high demand, offering a unique glimpse into an intriguing world that has all but disappeared.

So why won't the trumpets sound again? The answer lies in changing attitudes toward history and cultural artifacts. "The idea of actually playing a 3,000-year-old trumpet wouldn't be entertained today," archaeologist Christine Finn told The Independent's Jane Thynne, "but in the gung-ho archaeological heyday of the early 20th century, there were no such qualms." As much as people may long to hear the trumpets in person, it's more important to preserve them for another three millennia.

Please visit the site: <https://www.history.com/news/king-tut-tomb-trumpets> [Go there for pix]

ARCHAEOLOGY AT AARHUS UNIVERSITY **AND MOESGAARD MUSEUM PART OF** **MAJOR HORIZON 2020 DIGITAL CULTURAL** **HERITAGE INITIATIVE**

On 11-14 February, the ARIADNEplus project was launched, which is the world's largest digital network and research infrastructure in the fields of archaeology and cultural heritage, officially based in Florence. Aarhus University and Moesgaard Museum have been invited to join the ARIADNE collaboration owing to the strong research environment in digital cultural heritage at Moesgaard.

More than 40 partners primarily from European countries have joined forces to build a digital bridge between the huge amounts of archaeological finds, data and knowledge stored in local or national databases. This will create a unique basis for research work across European borders. Aarhus University (AU) contributes data from the registration portal DIME (Digitale Metaldetektorfund), which has grown into one of the largest crowdsourcing and citizen science projects in archaeology in a short time. The participation in ARIADNEplus involves the entire archaeological environment at Moesgaard – the Department of Archaeology and Heritage Studies, Moesgaard Museum (MOMU) and Archaeological IT – thereby reflecting the unique collaboration between AU and MOMU in this area.

Crowdsourcing and citizen science

AU and MOMU provide ARIADNE with application and research perspectives regarding the inclusion of non-professionals in archaeology. Denmark is known for the efficient collaboration between amateur archaeologists and professional archaeology, not least in relation to metal detection archaeology. In this field, AU and MOMU have made their mark with the launch of the DIME portal, through which metal detectorists can register their finds together with the archaeological museums. The participation in ARIADNE therefore builds on the Department of Archaeology and Heritage Studies' research focus on digital crowd sourcing and citizen science in the field of cultural heritage.

“Participation in the ARIADNEplus initiative is something we've been working towards for some time, and we're looking forward to bringing especially our strengths within crowdsourcing and citizen science into play. There are some exciting strategic perspectives in our participation in this international collaboration, and ARIADNE will help us boost our international profile in the field. We have high ambitions in the area of digital cultural heritage, not least in relation to building a research infrastructure in archaeology, which is an area with particular potential for Denmark,” says Andres Dobat, coordinator of AU's participation in ARIADNEplus.

Facts

More information about ARIADNEplus

ARIADNE plus is financed through the European Commission's Horizon 2020 programme.

Project period: 48 months from 1 January 2019.
More information about the DIME portal

Contact

If you have any questions about the project, please contact project coordinator Andres Dobat (associate professor of archaeology at the School of Culture and Society, Aarhus University), farkado@cas.au.dk, tel. +45 41118689

Contact to other project participants:

Peter Jensen, Archaeological IT, peter.jensen@cas.au.dk Jens-Bjørn Riis Andresen, AU, jens.andresen@cas.au.dk

Please visit the site:

<http://cas.au.dk/en/currently/news/singlenews/artikel/arkaeologi-paa-au-og-momu-deltager-i-stor-horizon-2020-satsning-paa-digital-kulturarv/>
