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Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

- Μάιος 2020 -

The antidote for fifty enemies is one friend.

(Aristotle)

Newsletter of the Hellenic Society of Archaeometry

- May 2020 -

Nr. 230

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ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS

GEORAMAN2020 BILBAO, EXTENSION OF DEADLINE FOR ABSTRACT SUBMISSION

Dear GeoRaman community,

taking in consideration the special circumstances in which this year will be organized the GeoRaman conference, we want to announce the extension of deadline for abstract submission.

The new deadline is June 14th

In the same way, the deadline to proceed with the payment of the fees will be extended beyond June 14th and announced as soon as possible.

The organizing committee with the support of Grisac would like to give time to scientists in these unusual times to prepare their works, but we kindly ask the community a common effort to maintain the vitality of our group and GeoRaman community, sending abstracts and subscriptions as soon as it becomes possible.

The organizing committee will do its best to welcome all of you in November and we hope to see in Bilbao.

Best regards and stay safe.

Kepa

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**4TH CAA-GR CONFERENCE 2020, COMPUTER
APPLICATIONS AND QUANTITATIVE
METHODS IN ARCHAEOLOGY, GREECE
'BIG DATA IN ARCHAEOLOGY', N.C.S.R.
"DEMOKRITOS", 1ST AND 2ND OCTOBER
2020, 3RD CIRCULAR, UPDATE AND
EXTENSION FOR ABSTRACTS**

Dear Colleagues,

We hope that we find you all well and in good health in the current crisis related to COVID-19. The organization of the 4th CAA-GR conference 'Computer Applications and Quantitative Methods in Archaeology, Greece' is not affected for the time being. We expect that in positive circumstances the situation will clear during the next months and that the conference can be held, as planned, at N.C.S.R. "Demokritos" on 1st and 2nd October 2020.

We would like to thank everybody who has already submitted an abstract for a presentation. Nevertheless, upon several requests and concerns we decided to extend the deadline for submission of abstracts for papers related to all aspects of computer applications, quantitative methods and digital applications in archaeology and cultural heritage of the Eastern Mediterranean. New deadline will be **29th May 2020**. The abstracts in english or greek should be submitted at abstract@caa-gr2020.net. A template for abstracts can be found on the conference webpage caa-gr2020.net. A selection of suggested topics can be found below but it is not mandatory. The abstracts will be reviewed by the Scientific Committee, who will decide about acceptance.

Details about organization of conference and one-day workshop and about registration for the two events will be announced on the conference webpage during the next weeks, when we will have a better picture about the developments of the current COVID-19 crisis. For more information and updates please visit our web page caa-gr2020.net, the webpage of the CAA-GR Society gr.caa-international.org or contact us at info@caa-gr2020.net.

Keep healthy, looking forward to welcoming you in October

The Organizing Committee

Organizing Committee

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Topics of the Conference 1st and 2nd October 2020

• *Databases and Statistics* o *Data management, data mining*

o *Semantics*

o *Statistical methods*

o *Pattern recognition*

• *Geographic Information Systems (GIS) and Prospection Methods* o *3D reconstruction and visualization of sites and landscapes*

o *Aerial photography and remote sensing*

o *Geophysical prospection*

o *Mapping of excavations and archaeological sites*

• *3-D Modeling of archaeological objects and infrastructure* o *Reconstruction and digital engineering*

o *Visualization and automatic recognition*

o *Simulation of function: FEM, CFD etc.*

• *Sensing techniques in Cultural Heritage* o *Monitoring microclimate*

o *Monitoring CH objects and sites*

• *Evaluation and Modeling of socio-ecological systems* o *Investigation of trade and technology transfer*
o *Agent based models and simulations*

• *Multimedia and virtual reality* o *Education*
o *Museums*
o *Gaming*

One Day Workshop, 30th September 2020

• *Management and evaluation of Big Data* o *Databases*
o *Pattern recognition*

CAA-GR 2020, N.C.S.R. “Demokritos”, 3rd Circular, 13 May 2020

Webpage: www.caa-gr2020.net Email: info@caa-gr2020.net



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

**FUNDED PHD IN ARCHAEOMETALLURGY
AT CAMBRIDGE UNIVERSITY AND BRITISH
MUSEUM**

The University of Cambridge and the British Museum are pleased to announce the availability of a fully funded collaborative doctoral studentship from October 2020 under the AHRC's Collaborative Doctoral Partnership Scheme.

The project “**Brass vs bronze: continuity and change from Late Antiquity to the early Islamic period in the Persian Gulf and adjacent regions**” will provide an excellent opportunity to combine research and training across two world-leading institutions.

The project will be jointly supervised by Professor Marcos Martín-Torres and Dr Aude Mongiatti, with additional input from relevant curatorial staff such as Dr St John Simpson and others. The student will be expected to spend time at both the University of Cambridge and the British Museum, and be an active member of both academic and research communities, as well as becoming part of the wider cohort of CDP funded students across the UK.

Further details: <https://www.arch.cam.ac.uk/news/new-doctoral-studentship-sasanian-early-islamic-archaeometallurgy>

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ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

THE NEOLITHIC LITHIC INDUSTRY AT TELL AIN EL-KERKH EXCAVATION REPORTS OF TELL EL-KERKH, NORTHWESTERN SYRIA 1, BY MAKOTO ARIMURA

Paperback; 388 pages; 158 figures, 192 tables, 132 plates.
Printed ISBN 9781789694567
Epublication ISBN 9781789694574

Northwest Syria during the Neolithic period has been less well studied than the rest of the northern Levant, where Neolithisation first took place in the Near East. The Neolithic Lithic Industry at Tell Ain El-Kerkh presents the first attempt to unveil the Neolithisation process in northwest Syria, with the techno-typological studies of the flintstone implements from Tell Ain el-Kerkh in the Rouj basin in Idlib, which was an important large Neolithic site occupied from the 9th to the 7th millennium BC.

Examination of the lithic record from Tell Ain el-Kerkh revealed techno-morphological changes in flint tools during the long Neolithic sequence from the Early Pre-Pottery Neolithic B (PPNB) to the end of the Pottery Neolithic. The author interprets such changes in stone tools in the socio-economic context of the Neolithic. Through the comparison between the data obtained from Tell Ain el-Kerkh and other Neolithic sites in the northern Levant, the regional characteristics of northwest Syria during the Neolithic period are highlighted. In the end, two important issues in the Neolithic Levant, diffusion of the PPNB culture and the PPNB collapse, are discussed based on the results of this study.

This volume includes substantial original data, drawings, and analysis of lithics from Neolithic sites in Syria, which will be useful for future discussion of the changes in material culture in relation with the Neolithisation process in the Near East.

About the Author

Makoto Arimura is a professor at Tokai University, Japan. He obtained his undergraduate degree in archaeology (1995) from the University of Tsukuba, Japan, under Professor Akira Tsuneki, and his PhD in archaeology (2007) from the Université Lumière Lyon 2, France, under Professor Olivier Aurenche and Dr Éric Coqueugniot [...]

Please visit the site:

<http://www.archaeopress.com/ArchaeopressShop/Public/displayProductDetail.asp?id={09105D7F-CCF8-41B5-A9F8-A938BBE1E41E}> [Go there for pricing range]

EΙΔΗΣΕΙΣ - NEWS RELEASE

DATING THE ANCIENT MINOAN ERUPTION OF THERA USING TREE RINGS, BY MARI N. JENSEN

New University of Arizona-led research uses tree rings to shed light on discrepancies between archeological and radiocarbon evidence in dating the ancient volcanic eruption of Thera.

New analyses that use tree rings could settle the long-standing debate about when the volcano Thera erupted by resolving discrepancies between archeological and radiocarbon methods of dating the eruption, according to new University of Arizona-led research.

“It’s about tying together a timeline of ancient Egypt, Greece, Turkey and the rest of the Mediterranean at this critical point in the ancient world — that’s what dating Thera can do,” said lead author Charlotte Pearson, an assistant professor of dendrochronology at the UA Laboratory of Tree-Ring Research.

“What we can say now is that the radiocarbon evidence is compatible with the archeological evidence for an eruption of Thera in the 16th century BC,” Pearson said.

Thera’s explosive eruption on Santorini more than 3,400 years ago buried the Minoan settlement on the island in a layer of ash and pumice more than 130 feet (40 meters) deep. The effects of the eruption were felt as far away as Egypt and what is now Istanbul in Turkey.

“The volcano erupts and represents one short moment in time,” she said. “If you can date precisely when that moment is, then whenever you find evidence of that moment at any archeological site, you suddenly have a very precise marker point in time — and that’s really powerful for examining human/environmental interactions around that time period.”

Archeologists have estimated the eruption as occurring sometime between 1570 and 1500 BC by using human artifacts such as written records from Egypt and pottery retrieved from digs. Other researchers estimated the date of the eruption to about 1600 BC using measurements of radiocarbon, sometimes called carbon-14, from bits of trees, grains and legumes found just below the layer of volcanic ash.

By using radiocarbon measurements from the annual rings of trees that lived at the time of the eruption, the UA-led team dates the eruption to someplace between 1600 and 1525, a time period which overlaps with the 1570-1500 date range from the archeological evidence.

“There’s been a huge debate about the timing of the Thera eruption and radiocarbon vs. archeological dating,” Pearson said. “Our data indicates that radiocarbon dating can overlap with various lines of archeological evidence for the eruption date.”

The current radiocarbon calibration curve that was developed over the past 50 years using tree rings extends 14,000 years into the past. At that time, the scientists needed to use chunks of wood that combined

10 to 20 years of a tree's annual rings to have enough wood to test for radiocarbon.

Work conducted at the UA Accelerator Mass Spectrometry Laboratory contributed substantially to the radiocarbon calibration curve currently in use worldwide.

Now radiocarbon testing requires just slivers of wood, so Pearson and her colleagues could test the annual growth rings of trees from 1500 back to 1700 BC — before, during, and after the time Thera was thought to have erupted. The 285 samples of annual tree rings were analyzed for radiocarbon at the UA AMS lab.

Co-author Gregory Hodgins, director of the UA AMS lab, said, “Charlotte’s redoing the calibration curve at an annual scale. What fell out of that was that the old calibration curve wasn’t precisely correct during this time frame.”

The paper, “Annual radiocarbon record indicates sixteenth century BC date for the Thera eruption,” by Pearson and her colleagues is scheduled to publish online Aug. 15 in Science Advances.

Her other UA co-authors are Peter Brewer, Timothy Jull, Todd Lange and Matthew Salzer. Other co-authors are David Brown of Queen’s University in Belfast, UK, and Timothy Heaton of University of Sheffield, UK.

The Malcolm H. Wiener Foundation, the Merops Foundation, plus the European Union and the State of Hungary (co-financed by the European Regional Development Fund) funded the research.

Pearson learned about the Thera eruption while studying archeology in college and has been fascinated by the eruption and its aftermath ever since.

Narrowing the date for the Minoan-era eruption of the volcano Thera is so important for Mediterranean archeology that there have been whole conferences about when that eruption occurred, she said.

Pearson wanted to know whether current dendrochronological and radiocarbon techniques could provide a more precise date for the eruption.

“Every tree ring is a time capsule of the radiocarbon at the year in which it grew, so we can say here’s a tree ring from 1600 BC and here’s how much radiocarbon is in it,” she said.

The radioactive carbon-14 within an annual tree ring starts decays at a steady rate and can act as a clock indicating when the tree grew that ring.

She and her colleagues used two different tree-ring chronologies from long-lived trees that were alive at the time of the Thera eruption but were growing 7,000 miles apart. Salzer’s extensive work on long-lived bristlecone pines living in California and Nevada

provided the 200 tree-ring samples representing each year from 1700 to 1500 BC. Brown provided 85 Irish oak annual tree-ring samples that spanned the same years.

Because Irish oaks and bristlecone pines add a growth ring every year, the rings laid down year-by-year represent an environmental history going back thousands of years in time.

A massive volcano such as Thera ejects so much material into the atmosphere that it cools the earth. For cold-climate trees such as Irish oaks and bristlecones, that exceptionally cold year shows up as a much narrower tree ring. Salzer's work reveals at least four different years within the new radiocarbon age range for Thera where the bristlecone pines had exceptionally narrow rings that might indicate a huge volcanic eruption.

“What we're doing in this study is using the annual nature of tree rings to improve the existing calibration curve for radiocarbon,”

Pearson said. “We wanted to tackle this time period in hopes we could use this to shed new light on the Thera debate.”

Hodgins said, “This research is about Thera, but really, the implications of it are profound for anyone that uses radiocarbon dating throughout the world for this time span. There's a kind of revolution in the radiocarbon community to revise the calibration curve using these more precise measurements.”

Other research teams are also finding discrepancies between their radiocarbon measurements using annual tree rings and the current radiocarbon calibration curve, he said.

Pearson, still fascinated by Thera, hopes future research can nail the eruption down to a particular year.

Please visit the site: <https://uanews.arizona.edu/story/dating-ancient-minoan-eruption-thera-using-tree-rings> [Go there for pix and caps]

SCIENTISTS HAVE TURNED A PIGMENT INVENTED BY THE ANCIENT EGYPTIANS INTO A VITAL NEW TOOL FOR BIOMEDICAL RESEARCHERS, BY NAOMI REA

Egyptian blue is one of the oldest pigments made by man. Now it is at the cutting edge of microscopic imaging.

A team of scientists in Germany has found a new, biomedical, use for a pigment invented by the Ancient Egyptians by turning it into nano-sized particles.

Egyptian Blue is one of the oldest man-made pigments. More than 4,000 years ago the Ancient Egyptians used it on tombs and on statues, including the crown of the famous limestone bust of Nefertiti, which is today in Berlin's Neues Museum.

A researcher at the University of Göttingen, Sebastian Kruss, has used the pigment, which is also known as calcium copper silicate, to produce a new nanomaterial that improves infrared spectroscopic and microscopic imaging.

It turns out that the pigment is a good “fluorophore,” a light-emitting material that is used to stain tiny samples so that they can be seen at clearer resolution using modern microscopes. The imaging is a vital tool in biomedical research.

Speaking to Artnet News, Kruss explains that he got the idea after a student labeled a sample with a pen, and the ink containing the pigment showed up on a specialized microscope. Kruss says it was “surprising” because very few materials show fluorescence at the near-infrared level, which is a light that humans cannot see. “We then started to make [the Egyptian Blue] pigment smaller and smaller to get tiny sheets that are useful for biomedical imaging.”

Kruss and his team were able to strip back the pigment to reduce its size by a factor of up to one million, and found that even then it works as a good fluorophore, remaining “extremely bright” and not bleaching as many standard dyes do at that level. These nanosheets are 100,000 times thinner than a human hair. “These tiny [Egyptian Blue] particles are then very useful glowing labels in biomedical research.”

Kruss suggests that this new “very powerful fluorophore” could be used “to understand how an embryo develops or cells divide,” in “image guided surgery, or labelling of cancer tissue.”

“I am sure it will be of growing interest for material scientists as well as biomedical research,” Kruss says.

Please visit the site: <https://news.artnet.com/art-world/egyptian-blue-science-1819458> [Go there for pix]

RESEARCHERS USE AI TO TRANSLATE TEXT FOUND ON ANCIENT CLAY TABLETS, BY THOMAS MACAULAY

The system could uncover new secrets about the past

Scientists at the University of Chicago are developing a machine learning system that can automatically transcribe text found on ancient clay tablets.

The DeepScribe system will initially focus on transcribing the Cuneiform writing system used in the ancient Iranian Achaemenid Empire (550–330 BC), the University of Chicago News reports.

Existing computer systems struggle to translate this script, due to its complex characters and the 3D form of the tablets on which they're written.

The team of researchers from the University of Chicago's Oriental Institute and its Department of Computer Science thinks their system could do better.

To build the model, they're training it on more than 6,000 annotated images from the Persepolis Fortification Archive. This will teach the system to read tablets in the collection that have never been analyzed before.

They believe the system could uncover new secrets about Achaemenid history, society, and language.

Eventually, it could even be adapted to other ancient forms of writing.

“If we could come up with a tool that is flexible and extensible, that can spread to different scripts and time periods, that would really be field-changing,” said Susanne Paulus, associate professor of Assyriology at the University of Chicago.

Translating the past

The training data is built on a dictionary of the language developed by researchers and a database of more than 100,000 individual signs built by students.

Professor Sanjay Krishnan of the Department of Computer Science at the University of Chicago used this annotated dataset to train a machine learning model to read other tablets. The model managed to decipher the signs with an accuracy of around 80%.

The team will conduct further research to improve the accuracy rate.

In time, it could even help determine the source of artifacts whose origins are currently unknown. However, they will need to act fast, as the tablets may soon return to their own country of origin: Iran.

Please visit the site: <https://thenextweb.com/neural/2020/03/12/researchers-use-ai-to-translate-text-found-on-ancient-clay-tablets/>

BRAIN SURGERY WAS CONDUCTED IN EASTERN ROMAN EMPIRE

What chemical analyzes of human bones tell us about kitchen utensils in the Middle Ages

New research from Adelphi University has revealed the first forensically-assessed archeological discovery of remains of a group of domineering mounted archer-lancers and their kin of the Eastern Roman Empire from the turbulent ProtoByzantine period, which spanned the fourth to seventh centuries.

Ten skeletal remains — four women and six men likely of high social standing — were discovered in the Paliokastro site on Thasos island in Greece. Their bones illuminated their physical activities, traumas, and even a complex form of brain surgery.

“The burial place and architecture of the funerary monumental church and the construction of the graves is spectacular,” said lead researcher and anthropologist Anagnostis Agelarakis, PhD, who added that it indicates the high social standing of the individuals buried there.

The advanced preservation of their remains and the impressive location and architecture of the funerary monumental church where they were buried exhibit their high status in the region.

“According to the skeleto-anatomic features of the individuals, both men and women lived physically demanding lives,” said Agelarakis, professor of anthropology in Adelphi’s Department of History. “The very serious trauma cases sustained by both males and females had been treated surgically or orthopedically by a very experienced physician/surgeon with great training in trauma care. We believe it to have been a military physician.”

As for the brain surgery, Agelarakis suggests that “even despite a grim prognosis, an extensive effort was given to this surgery for this male. So, it’s likely that he was a very important individual to the population at Paliokastro.”

Agelarakis and his colleagues were able to derive medical and surgical data, as well as paleopathological data, on this “extraordinary head and neck surgery and the great efforts of the surgeon.” It was determined that the likely cause for the surgical intervention was infection and that archer died shortly after or during surgery.

“The surgical operation is the most complex I have ever seen in my 40 years of working with anthropological materials,” Agelarakis said. “It is unbelievable that it was carried out, with most complicated preparations for the intervention, and then the surgical operation itself which took place, of course, in a pre-antibiotic era.”

The results are described in a new book, “Eastern Roman Mounted Archers and Extraordinary Medico-Surgical Interventions at Paliokastro in Thasos Island during the

ProtoByzantine Period: The Historical and Medical History Records and the Archaeo-Anthropological Evidence,” by Archaeopress, Access Archaeology.

Please visit the site: <https://www.heritagedaily.com/2020/04/brain-surgery-was-conducted-in-eastern-roman-empire/127321>

THE MYSTERY OF THE 'BLUE MONKEYS' IN ANCIENT GRECIAN FRESCOS, SOLVED, BY ASHLEY STRICKLAND

Monkeys appear in Grecian frescoes dating back to the Bronze Age 3,600 years ago, but monkeys aren't native to Greece or the Aegean isles.

Nonindigenous and even fictional animals and creatures have appeared in ancient and medieval artwork. And it's hilariously obvious when the artist never actually encountered the animal they're depicting, like those in medieval manuscripts.

But it's clear that the artists actually saw these monkeys in Grecian frescoes, or at least talked to someone who did in great detail, because the depictions are so accurate that researchers can identify the monkeys, according to a new study.

Vervet monkeys appear in a fresco from Akrotiri, Thera. They're known for their rounded muzzles, a white band on the forehead, an extended tail and elongated limbs -- all accurately shown in the fresco.

Baboons crop up in a fresco from Knossos, Crete. Their hallmarks, including a hairless nose, narrow waist, thick chest and face shape, make them easy to identify in the depiction.

The monkeys are even behaving as they would in real life, with the vervet monkeys climbing and the baboons on the ground.

Both are native to northeastern Africa. This builds on previous evidence that Minoan people had contact with this part of Africa, providing some of the strongest support yet.

One big difference from real life though is that the depicted monkeys are blue. But researchers believe that's because cultures identify colors differently on the spectrum, and these painters likely saw blue as belonging to the gray and green families of color. The same can also be said of fish scales in Minoan art.

Or it could be a nod to the ancient Egyptians, who deified baboons and used blue, considered a sacred color, to depict them.

The study published this week in the journal *Antiquity*.

"The small-bodied, agile and naturalistically represented vervet monkeys were most often associated with leisure activities," the authors wrote in the study. "Whereas the larger, sturdier, more terrestrial baboons -- monkeys that were already deified in nearby Egypt -- were attributed [to] more anthropomorphic behaviours and depicted in sacred or ritual events.

This research is part of what is called archaeoprimatology, a fairly new field that studies primates and archeology.

"This Aegean Bronze Age society, then, was the first European civilisation to perceive, represent, socially construct and, eventually, have contact with non-human primates," the

authors wrote in the study. "The representation of primates in Minoan contexts confirms the early exchange of iconography and knowledge of monkeys among Aegean islanders, and substantiates their interaction with human populations from North Africa that might have had these primate species living around their coastal settlements."

The colorful, dramatic frescoes reveal that ancient Greeks were documenting their growing understanding of primates -- and showing that their islands were very connected to the rest of the world.

Please visit the site: <https://edition.cnn.com/2020/04/15/world/monkeys-grecian-frescoes-scn/index.html?fbclid=IwAR0foNpV2JiMTg0wkTD5yVjsRdJ-v0g2eHyDtO5gGCX1ML9rZjlFr2LZXQw>

HUMAN FIGURE DETECTED ON 14,000- YEAR-OLD BURIAL SLAB IN ISRAEL, BY RUTH SCHUSTER

The Natufians were the first to bury their dead in cemeteries, albeit in shallow graves, and mysterious slabs were placed in and above some graves. One found in Raqefet Cave bore an enigmatic engraving that may hint at elaborate ritual

A unique engraving of what looks like a dancing shaman has been identified incised on a burial slab in a Natufian cemetery in northern Israel.

The slab lay over the remains of several individuals dating from 14,000 to 12,000 years ago, based on radiocarbon analysis of several of the skeletons. However, the remarkable image on the slab was only noticed some years after its discovery, while the stone was being carefully studied in the laboratories of the Zinman Institute of Archaeology at the University of Haifa, Haaretz has learned.

The image on the slab is an extremely rare example of an identifiable human figure made by Natufians, the researchers say.

The Natufian culture existed from about 15,000 to about 11,700 years ago, and spanned from Sinai in the south to northern Syria, and east into the Jordanian desert, according to professors Danny Rosenberg, György Lengyel and Dani Nadel, and research fellow Rivka Chasan, in their new paper in the Oxford Journal of Archaeology.

The protracted period of transition from Paleolithic hunter-gatherer society to Neolithic agriculture that started around 15,000 years ago in the Mediterranean region is dubbed the Natufian period. Small nomadic groups gave way to complex sedentary or semi-sedentary communities that existed on the threshold of agricultural society.

At some sites, archaeologists tend to agree that the Natufians actually settled year-round in hamlets. As they settled and began to farm (and had dogs), the Natufians established what may be the earliest distinct cemeteries, where communities buried at least some of their dead. At least some others who were dearly departed were relegated to beneath the floor of the home or laid to rest nearby.

But it seems that when they did bury their dead, Natufian mortuary practices were elaborate. Their funerals may have featured gathering and feasting, and – going by the newly found crude depiction – dancing. The figure on the slab could plausibly be a shaman with an exposed penis or be dressed up as an animal, in which case the protuberance could be a tail.

Or maybe it was a lizard. In time, hopefully more slabs will be found and examination with advanced technology will shed new light on this intriguing phenomenon, the researchers add.

Possible mortuary practices among archaic humans are one of the most hotly debated topics in anthro-archaeology. Did the enigmatic Homo naledi with its small, orange-sized brain deliberately inter its dead in the profoundly inaccessible depths of a cave in South Africa

300,000 years ago? Or did a bunch of them just get stuck and die there over the years? Did Neanderthals inter their deceased, at least sometimes, and did they at least one time say their goodbyes with flowers?

Evidence of the Natufians has been found at dozens of sites in Israel alone. At Raqefet Cave on Mount Carmel, there are no signs of Natufian-period settlement: it was used for burial, they say.

Certain hallmarks of the Natufian burials smack of ritual. Take, for instance, the slabs. Of the roughly 500 Natufian burials investigated throughout their range to date, most don't seem to have such proto-gravestones; slabs were found at several sites like el-Wad Terrace and Nahal Oren (both also on Mount Carmel), and Hayonim Cave (near Carmiel), in addition to Raqefet Cave. It is possible that some excavations decades ago failed to notice certain rocks as artifacts.

In the case of the Raqefet Cave burials, the slabs clearly did not fall off the cave ceiling. They had to have been lugged there, at some effort – it would have involved climbing several dozen meters up a cliffside. Nobody does that without good reason.

“The cemetery is in the first chamber, a large hall at the entrance of the cave,” Nadel and Rosenberg say. The renewed excavations were led by Nadel and altogether some 30 individuals of all ages were found – from babies to children to adults, men and women, some in multiple burials and some individually. They found about 10 slabs.

It was impossible to tell to whom the particular slab with the enigmatic engraving “belonged”: It wasn't inside a burial, it was situated above several.

Mark you, Rosenberg points out, these weren't graves as we think of them. They were usually shallow pits, and unmarked.

Rosenberg adds that the team didn't identify any patterns on the other slabs: They seem unmodified, though he says the Natufians could have painted them or created some other decoration that has not survived the millennia. We may never know. Or there is something there but “we may not understand what we see,” he observes.

Some slabs found in Hayonim Cave, where dozens of burials were found, bore etchings, but they don't seem to have been human forms. They may have been abstracts or animals, but they're too far gone to be sure of much. The one now reported at Raqefet Cave is the first humanoid depiction known from Natufian graves, if humanoid it is.

The find spot of the incised slab with the humanoid image in Raqefet Cave Dani Nadel

Mystery of the missing dead

Speaking of which, if the archaeologists found only 30 skeletons in the excavated part of Raqefet Cave, that seems a tad parsimonious for centuries of mortality. What happened to all the rest? And where did these come from? Did they all die naturally?

We don't know. Since the graves were shallow, bodies could have been dug up and eaten by animals, or removed by later users of the cave. Or maybe they weren't ceremonially buried: perhaps that distinction was confined to the prehistoric elites, though again we note that the human remains in the cave were from all ages and both sexes. And in all positions. They didn't have a preferred burial position, the archaeologists say.

In all cave and open-air burial sites in prehistoric Israel, whether of early modern humans or Neanderthals, there are only a few skeletons, if any at all: cemeteries as such are only found in Natufian or later sites.

The largest Natufian cemeteries were found in the el-Wad cave and terrace – which has been undergoing archaeological investigation for almost 100 years now (not every year) – and Eynan in the Hula Valley. In each site, more than 100 Natufian burials were found.

As for the crude humanoid image on the Raqefet slab, it is true that tens of thousands of years earlier, hunter-gatherers in Europe and Southeast Asia were doing spectacular art on cave walls. Maybe they were in Israel too but it hasn't been preserved.

Natufians did, however, make figurines of stone, bones and antler, which included human heads, animal heads and other things that we can't identify – possibly because they were abstract or because they didn't weather well.

They also buried their dead (when they buried them) with grave goods, including meat, stone tools and even heavy stone mortars. The use of massive mortars found at burial sites remains mysterious, though Nadel and Rosenberg have suggested they weren't used solely to pound grain or meat, but maybe as musical instruments (such as drums) to summon the people for a funeral or for other reasons.

One burial, of a woman about 12,000 years ago, found by Hebrew University archaeologists in Hilazon Tachtit Cave, Western Galilee, was so elaborate that Leore Grosman and colleagues postulate she had to have been a shaman or was otherwise held in profound esteem. Her grave goods included 86 tortoise shells, an eagle's wing, a leopard's pelvic bone, the leg of a pig and tailbone from a cow, among other things.

In Raqefet Cave, Nadel and Rosenberg also found a large bedrock mortar with grid-like incisions accompanied by irregular lines inside its shaft. "We have no idea why, but it was very clear because they repeatedly went over the lines by scratching to make sure they were there," Nadel says, adding: "I can't imagine who could see into the narrow mortar."

They also found four graves with the impressions of green plants lining the pits before inhumation. These included flowers such as wild sage, the archaeologists say.

So the bottom line is that the Natufians had a remarkable respect for the dead and may have held complex and sophisticated rituals that included feasts, judging by the animal bones and garbage they left behind. They may also have indulged in the demon alcohol,

judging by evidence for brewing noted at Raqefet Cave as well; and the last rites may have also featured music and a dancing figure, perhaps even a shaman.

Please visit the site: <https://www.haaretz.com/archaeology/.premium-human-figure-detected-on-14-000-year-old-burial-slab-in-israel-1.8780763> [Go there for pix]

ON THE ORIGIN OF FECES: COPROID RELIABLY PREDICTS SOURCES OF ANCIENT POOP BY THE MAX PLANCK SOCIETY

The archaeological record is littered with feces, a potential goldmine for insights into ancient health and diet, parasite evolution, and the ecology and evolution of the microbiome. The main problem for researchers is determining whose feces is under examination. A recent study published in the journal PeerJ, led by Maxime Borry and Christina Warinner of Max Planck Institute for the Science of Human History (MPI-SHH), presents CoproID: a reliable method of inferring sources of paleofeces.

Machine learning enables reliable classification After thousands of years, the source of a particular piece of feces can be difficult to determine. Distinguishing human and dog feces is particularly difficult: they are similar in size and shape, occur at the same archaeological sites, and have similar compositions. In addition, dogs were on the menu for many ancient societies, and our canine friends have a tendency to scavenge on human feces, thus making simple genetic tests problematic, as such analyses can return DNA from both species.

In order to access the insights contained within paleofeces, the researchers developed coproID (coprolite identification). The method combines analysis of ancient host DNA with a machine learning software trained on the microbiomes within modern feces. Applying coproID to both newly sequenced and previously published datasets, the team of researchers from the MPI-SHH, Harvard University, and the University of Oklahoma were able to reliably predict the sources of ancient feces, showing that a combination of host DNA and the distinct colonies of microbes living inside humans and dogs allow their feces to be accurately distinguished.

Classification capability provides insights into digestive health "One unexpected finding of our study is the realization that the archaeological record is full of dog poop," says Professor Christina Warinner, senior author of the study. But Warinner also expects coproID to have broader applications, especially in the fields of forensics, ecology, and microbiome sciences.

The ability to accurately identify the source of archaeological feces enables the direct investigation of changes in the structure and function of the human gut microbiome throughout time, which researchers hope will provide insights into food intolerances and a host of other issues in human health. "Identifying human coprolites should be the first step for ancient human microbiome analysis," says the study's first author, Maxime Borry.

"With additional data about the gut metagenomes of non-Westernized rural dogs, we'll be better able to classify even more ancient dog feces as in fact being canine, as opposed to 'uncertain,'" Borry adds.

As the catalog of human and dog microbiome data grows, coproID will continue to improve its classifications and better aid researchers that encounter paleofeces in a range of geographic and historical contexts.

Please visit the site: <https://phys.org/news/2020-04-feces-coproid-reliably-sources-ancient.html> [eARTICLE at <<https://peerj.com/articles/9001/>

ANCIENT GREEK SITE WHERE MEN WERE BURIED WITH THEIR HORSES TO BE RESTORED, BY TASOS KOKKINIDIS

The Minister of Culture Lina Mendoni vowed to restore the ancient burial site of Doxipara located in Evros in northeast Greece which she described as having an “indisputable archaeological and historical value.”

During her visit to the site on Friday, Mendoni said that a museum will be build to showcase the tomb which dates back to the 2nd century AD.

Archaeologists say that four members of a rich family who died successively, were cremated and buried at the site, and the large burial tumulus of Doxipara was built in memory of them.

The excavations of the burial tumulus of Doxipara began in 2002 and brought to light four cremation pits, which contained residue of incineration from what is believed to be two middle-aged men, a young man, and a young woman.

In these pits of the burial tumulus of Doxipara a number of objects were also discovered that accompanied the dead to the other world, according to the traditions of that time; clay and bronze pottery, lamps, and lanterns, weapons and jewelry were among the findings.

What makes the Burial Tumulus of Doxipara important is the discovery of five carriages, buried together with their five horses around the tumulus. Such findings have been found in Asia and Europe, but this the first discovery specifically in Greece. Four-wheel carriages were used for the transport of the dead to incineration and burial.

Please visit the site: <https://greece.greekreporter.com/2020/04/25/ancient-greek-site-where-men-were-buried-with-their-horses-to-be-restored/> [Go there for pix]

FOUR AMAZING ASTRONOMICAL DISCOVERIES FROM ANCIENT GREECE, BY GARETH DORRIAN AND IAN WHITTAKER

The Histories by Herodotus (484BC to 425BC) offers a remarkable window into the world as it was known to the ancient Greeks in the mid fifth century BC. Almost as interesting as what they knew, however, is what they did not know. This sets the baseline for the remarkable advances in their understanding over the next few centuries – simply relying on what they could observe with their own eyes.

Herodotus claimed that Africa was surrounded almost entirely by sea. How did he know this? He recounts the story of Phoenician sailors who were dispatched by King Neco II of Egypt (about 600BC), to sail around continental Africa, in a clockwise fashion, starting in the Red Sea.

This story, if true, recounts the earliest known circumnavigation of Africa, but also contains an interesting insight into the astronomical knowledge of the ancient world.

The voyage took several years. Having rounded the southern tip of Africa, and following a westerly course, the sailors observed the Sun as being on their right hand side, above the northern horizon. This observation simply did not make sense at the time because they didn't yet know that the Earth has a spherical shape, and that there is a southern hemisphere.

1. The planets orbit the Sun

A few centuries later, there had been a lot of progress. Aristarchus of Samos (310BC to 230BC) argued that the Sun was the “central fire” of the cosmos and he placed all of the then known planets in their correct order of distance around it. This is the earliest known heliocentric theory of the solar system.

Unfortunately, the original text in which he makes this argument has been lost to history, so we cannot know for certain how he worked it out. Aristarchus knew the Sun was much bigger than the Earth or the Moon, and he may have surmised that it should therefore have the central position in the solar system.

Nevertheless it is a jawdropping finding, especially when you consider that it wasn't rediscovered until the 16th century, by Nicolaus Copernicus, who even acknowledged Aristarchus during the development of his own work.

2. The size of the Moon

One of Aristarchus' books that did survive is about the sizes and distances of the Sun and Moon. In this remarkable treatise, Aristarchus laid out the earliest known attempted calculations of the relative sizes and distances to the Sun and Moon.

It had long been observed that the Sun and Moon appeared to be of the same apparent size in the sky, and that the Sun was further away. They realised this from solar eclipses, caused by the Moon passing in front of the Sun at a certain distance from Earth.

Also, at the instant when the Moon is at first or third quarter, Aristarchus reasoned that the Sun, Earth, and Moon would form a right-angled triangle.

As Pythagoras had determined how the lengths of triangle's sides were related a couple of centuries earlier, Aristarchus used the triangle to estimate that the distance to the Sun was between 18 and 20 times the distance to the Moon. He also estimated that the size of the Moon was approximately one-third that of Earth, based on careful timing of lunar eclipses.

A 10th century reproduction of a diagram by Aristarchus showing some of the geometry he used in his calculations. wikipedia, CC BY-SA

While his estimated distance to the Sun was too low (the actual ratio is 390), on account of the lack of telescopic precision available at the time, the value for the ratio of the size of the Earth to the Moon is surprisingly accurate (the Moon has a diameter 0.27 times that of Earth).

Today, we know the size and distance to the moon accurately by a variety of means, including precise telescopes, radar observations and laser reflectors left on the surface by Apollo astronauts.

3. The Earth's circumference

Eratosthenes (276BC to 195 BC) was chief librarian at the Great Library of Alexandria, and a keen experimentalist. Among his many achievements was the earliest known calculation of the circumference of the Earth. Pythagoras is generally regarded as the earliest proponent of a spherical Earth, although apparently not its size.

Eratosthenes' famous and yet simple method relied on measuring the different lengths of shadows cast by poles stuck vertically into the ground, at midday on the summer solstice, at different latitudes.

The Sun is sufficiently far away that, wherever its rays arrive at Earth, they are effectively parallel, as had previously been shown by Aristarchus. So the difference in the shadows demonstrated how much the Earth's surface curved. Eratosthenes used this to estimate the Earth's circumference as approximately 40,000km. This is within a couple of percent of the actual value, as established by modern geodesy (the science of the Earth's shape).

Later, another scientist called Posidonius (135BC to 51BC) used a slightly different method and arrived at almost exactly the same answer. Posidonius lived on the island of Rhodes for much of his life.

There he observed the bright star Canopus would lie very close to the horizon. However, when in Alexandria, in Egypt, he noted Canopus would ascend to some 7.5 degrees above the horizon.

Given that 7.5 degrees is 1/48th of a circle, he multiplied the distance from Rhodes to Alexandria by 48, and arrived at a value also of approximately 40,000km.

4. The first astronomical calculator

The world's oldest surviving mechanical calculator is the Antikythera Mechanism. The amazing device was discovered in an ancient shipwreck off the Greek island of Antikythera in 1900.

The device is now fragmented by the passage of time, but when intact it would have appeared as a box housing dozens of finely machined bronze gear wheels. When manually rotated by a handle, the gears span dials on the exterior showing the phases of the Moon, the timing of lunar eclipses, and the positions of the five planets then known (Mercury, Venus, Mars, Jupiter, and Saturn) at different times of the year. This even accounted for their retrograde motion – an illusionary change in the movement of planets through the sky.

We don't know who built it, but it dates to some time between the 3rd and 1st centuries BC, and may even have been the work of Archimedes.

Gearing technology with the sophistication of the Antikythera mechanism was not seen again for a thousand years.

Sadly, the vast majority of these works were lost to history and our scientific awakening was delayed by millennia. As a tool for introducing scientific measurement, the techniques of Eratosthenes are relatively easy to perform and require no special equipment, allowing those just beginning their interest in science to understand by doing, experimenting and, ultimately, following in the foot steps some of the first scientists.

One can but speculate where our civilisation might be now if this ancient science had continued unabated.

Please visit the site:

https://www.realclearscience.com/articles/2020/04/25/four_amazing_astronomical_discoveries_from_ancient_greece_111372.html

PASTA FINDS ITS ROOTS IN ANCIENT GREECE; HISTORIANS PROVE THROUGH TEXTS

It is widely believed that pasta's inspiration comes from Chinese noodles. However, some historians believe that its roots are in ancient Greece – and they have the texts to prove it.

Pasta is probably one of the most favourite in not only European countries but also in India, Philippines, Brazil, South Africa and many more. While it is believed that pasta was inspired by Chinese noodles brought to Europe by Venetian nobleman and merchant Marco Polo in the 13th century, food historians are set to prove it wrong.

While Marco Polo did bring a lot of Chinese culture to Europe after spending several years in China, Italian food critics believe that pasta was not brought by him. The historians say pasta culture was already flourishing in the Mediterranean region centuries before he travelled east.

Giorgio Franchetti, a food historian and scholar of ancient Roman history, dismissed this theory by calling it pure nonsense. "The noodles that Marco Polo maybe brought back with him at the end of the 1200s from China were essentially made with rice and based on a different, oriental culinary tradition that has nothing to do with ours."

"Between 1000BC and 800BC, the Greeks first mentioned the existence of laganon, a flat pasta sheet sliced into irregular strips that was later adopted by the ancient Romans with the plural name of laganæ.

It was used in soups of leek and chickpeas, a very popular Roman dish," he added.

The food historians mentioned that the Roman strips of pasta were similar to a particular type of pasta Called maltagliati, which is still served in Italy.

Talking about the difference between noodles and pasta, Anna Maria Pellegrino, a food historian and a member of the Italian Academy of Cuisine, said, "They reflect two separate culinary cultures and identities that have developed in parallel, the only conjunction being the need for nourishment and, above all, to share around the same table feelings and everyday life events. The way they are cooked, the pots, the types of cereals used, the preparation, ingredients and toppings are completely different and specific to each civilisation.

There's no direct link between the Asian and the Italian or Mediterranean ways of mixing cereals with water to create noodles or pasta."

Talking about how the philosopher and statesman Cicero was a pasta enthusiast, Franchetti says it remains unclear whether his stomach pains were due to eating too much laganæ or to health problems.

Franchetti also pointed out that Roman poets and philosophers often wrote of their love for in laganæ. Horace, in one of the pieces in his famed collection of poems, Satires, writes that he cannot wait to get home to enjoy a bowl of leeks, chickpeas and laganæ.

“Back in the [ancient] Roman times, laganae was a daily meal in each household, a very democratic, simple but highly nutritious dish for the poor and the working classes, not the wealthy,” she says. “It was the main comfort food, just like pasta is today for Italians,” said Cristina Conte, an “archaeo-chef”.

Another theory based on Ibn-al-Mibrad's cookbook proved the dry pasta could then be mixed with legumes, especially lentils. The birth of dry pasta has been linked to the culture and lifestyle of nomadic Arabian tribes. It is believed that to cope with water scarcity during long journeys in the desert, Arabs dried their pasta in hollow cylindrical shapes. Spaghetti, too, in particular, appears to have had Arabic influence.

“If we take dry pasta as reference and look for written sources, we need to wait for the ninth century, when we know for sure that the Arabs were the first to dry pasta. Or at least, they were the first to document it.” says Franchetti.

Please visit the site: <https://www.wionews.com/world/pasta-finds-its-roots-in-ancient-greece-historians-prove-through-texts-294266>

HOW ANCIENT EGYPT SHOWS THAT CLIMATE CHANGE IS ALWAYS WITH US, BY JUDITH BUNBURY

In our times, climate change is much in the news with Extinction Rebellion and the campaigns of Greta Thunberg, but what of the past?

Decades of research in Egypt reveal that, in ancient times, humanity was also affected by climate change. Maybe it should come as no surprise that the reactions of ancient people mirrored our own. Some refused to acknowledge what was happening or blamed others for the general decay while some embraced the contemporary and set to work to manage and respond to the changes that they saw around them.

Archaeological research at sites across Egypt shows that climate change drives the landscape between two modes; cool and warm. When climate is cooler, the Saharan region dries, the Nile is lower and steadier and sea-level falls, extending the delta. Conversely, when climate warms, the Saharan region becomes green and dotted with lakes, the Nile valley marshy and the delta flooded.

Around eleven thousand years ago, the last ice-age ended as global warming ushered in the Holocene and a relatively long period of wetter weather in the Saharan region. Extensive, shallow lakes formed and wildlife and humans migrated into the new habitable realms.

During this North African Neolithic, life was a larder and relatively small groups of humans settled in spots that offered the advantages of both hunting, fishing and gathering of fruits and grains. Hundreds of ancient rock-art panels, flint implements and remains of settlements give us glimpses of the rich life of this now desert area.

The early Holocene warming also affected the Nile Valley and the Delta to the North. Ice-melt raised global sea-levels by around 120m and the Atlantic Ocean overflowed into the Mediterranean, inundating the Delta and swamping the valley far inland. These changes produced an unstable environment with many rapidly changing channels. They also provided a wide-range of food sources that were visited by the desert dwellers on a seasonal basis. From cultural remains, the scattered bands of gatherer-pastoralists did meet and exchange during these visits but otherwise stuck to their dry-valley (wadi) basins and lake shores.

Then, five thousand years ago, climate began to cool again. The Saharan lakes dried up and the Nile valley became tamer. To survive, populations moved from the Saharan region into the Nile valley arriving at sites like Hierakonpolis.

The condensation of so many different groups stimulated a cultural florescence but as the vegetated valleys dried and died towards the end of the Pre-Dynastic period (around 3000 BCE) agriculture in the Nile valley became essential to survival. Thus, was the Egyptian state born with the development ceremonial and ritual practices associated with irrigation like those recorded on the Scorpion mace head from Hierakonpolis.

After the lakes of the Saharan region dried, wind-blown sand started to collect in the Nile Valley, occasionally blocking it but more often adding to the sediment carried by the channels. While the pyramids at Giza were constructed, this sand-flow reached a peak and added to a sense of contemporary woe and decay, known to Archaeologists as the First Intermediate Period. Egyptian archaeologist Nicole Alexanian sees striking evidence of this sand drowning a tunnel at Dashur.

The extra sand, as it fell into and flushed through the Nile river-system also stabilised the Delta, expanding its size at the same time as reducing the variety of habitat and encouraging centralisation of the community in the general area of what is now Cairo.

After the disruption of the First Intermediate Period, Egypt re-stabilised at the beginning of the Middle Kingdom and innovation in the Nile Valley surged again. For example, King Amenemhat III is credited with re-greening the dried-up lake of the Faiyum Oasis by diverting water from a branch of the Nile into it. While Amenemhat's scheme was one of the first large-scale interventions into the courses of the Nile's subsidiary the Bahr Yusuf, his successors took up and elaborated the theme.

These early experiments were mainly on the smaller Bahr Yusuf but by the New Kingdom, (1550-1070 BCE) more ambitious schemes to manage the main Nile emerged.

At Memphis, near to modern Cairo, geoarchaeologist Pedro Goncalves found the remains of large diversions and embankments directed towards land reclamation and harbour improvement associated with the temple of Ptah.

New Kingdom segmentation of the central channel at Memphis to create the site of the Ptah Temple after the work of Pedro Goncalves.

Other New Kingdom schemes are exemplified by the work of Amenhotep III who excavated the vast reservoir of Birket Habu in Luxor (total area 2.3km²), itself part of a much larger landscape and water-management scheme.

Interestingly, the New Kingdom was also one of temporary global warming as we learn from the Greenland ice-core records. The warming re-filled desert aquifers and the cross-desert routes came back into use supported by wells, waterholes and oases. We can only speculate that the artistic flourishing of the New Kingdom was built upon the fruits of a brief warm period. However, we do know that the female King Hatshepsut (c. 1479-1458 BCE) grew a number of plant species, like myrrh, not normally found in Egypt today and which she imported from the 'Land of Punt' somewhere to the south.

Later, during the Roman empire (~30 BC- 641 CE) there was another period of warming coupled with a Roman ambition to direct, divert and retain the main Nile itself. Researchers like Willem van Toonen are finding evidence for wholesale shifts of the Nile channel during this period at cities like Antinoupolis, founded by Hadrian in (130 CE). As yet, we do not know whether the Nile jumped or whether it was pushed!

Roman ingenuity also re-greened parts of the Kharga Oasis by the introduction of Persian qanat technology. Qanats are underground tunnels linking multiple wells that garner water from a wide area and could support settlements like Debadeb.

Arguably schemes to control and manage the Nile have culminated in the construction of the Aswan High Dam that now gives complete control over the annual flood of the Nile but what of climate change? Are recent rains in Egypt a harbinger of the next interlude of global warming?

Will oases re-emerge and cross-desert routes re-open as the Saharan region re-greens?

And what of sea-level rise? Already historic Google Earth imagery shows how the delta-front is being eroded. Sea-level rise driven by the forecast melting of the polar ice-caps will further impinge upon the agricultural area of the Delta. It may also increase the risk of flooding in the Nile Valley and imperil the capital, Cairo. In Egypt, past evidence for climate and landscape change and the way in which people responded gives us a window onto the future. We should pay attention!

Judith Bunbury is Senior Tutor at St. Edmund's College, Cambridge, and Teaching Associate in Earth Sciences.

Please visit the site: <http://www.asor.org/anetoday/2020/04/climate-change> [Go there for nice format and pix]



ISTRIAN ARCHAEOLOGISTS HAVE EXCAVATED AN ANCIENT WOODEN BOAT DATING BACK TWO THOUSAND YEARS FROM UNDER THE POREČ WATERFRONT

The archaeological finding, the biggest in the last 30 years, is significant because the boat is well preserved and has many elements that are very rarely seen.

The results of the research were presented on Monday by the director of the National Museum of Poreč Elena Uljančić, archaeologist Klaudia Bartolić Sirotić, the staff of the Local Museum, historian Gaetano Benčić, archeologists Davor Munda, Aleksandra Pajić and Marko Uhač from the Conservation Department of Pula and Mayor Loris Peršurić.

The ancient wooden boat was found at the very end of the Poreč waterfront at the Porta de mar site, at the intersection of the waterfront with Cardo Maximus street near the former Kompas building.

This is the third such boat found on the mainland in Istria and the first in Poreč. The other two were found in Pula. The boat was made by a sewing technique, which was characteristic of the northern Adriatic area.

“It is a Roman sewn ship from the 1st century AD. The technique of sewing the ship is known from earlier periods, from the time of Histria. One of the oldest boats of this type was found at the site of Zambratija near Umag. This specimen from Poreč is one of three boats found on land that are not part of an underwater archaeological survey,” Bartolić Sirotić, an archaeologist from the Regional Museum of Poreč, told Jutarnji list before adding.

“This finding is significant because it is well preserved and has many elements that are very rarely seen. These are primarily the formwork, ribs, and keel. In years, it will be possible to make a preliminary reconstruction of the vessel.”ealed to Jutarnji list that it was in fact a bit longer. It is 1.70 meters wide and had a sail. It was well preserved because it was at a certain depth in the soil and could not be penetrated by oxygen. Certainly, a significant role in its conservation was played by the sludge with which it was covered.

“All this preserved it and the wood was not destroyed. We are now conducting research. Every stitch that is made is recorded. The sewing technique is such that we have ropes that are tied with rope and sewn through holes that insert wooden nails called spots. And after that, the ribs, which are connected with this plate by the big wooden nails, are put on,” Bartolić Sirotić adds.

The archaeologist points out that the very context of the findings is very interesting because Poreč was once an ancient colony. Excavations also show what the waterfront of Poreč once looked like. It was more recessed and lower than the present. The boat was found at an ancient pier.

Please visit the site: <https://www.croatiaweek.com/video-2000-year-old-roman-sewn-boat-discovered-under-porec-waterfront/> [Go there for pix and video]
