

References

Aktuell

AOUIZERAT 2019

Tzemach Aouizerat et al., *Isolation and Characterization of Live Yeast Cells from Ancient Vessels as a Tool in Bio-Archaeology*. [mBio 10 \(2019\), e00388-19](#).

Tzemach Aouizerat, Itai Gutman, Yitzhak Paz, Aren M. Maeir, Yuval Gadot, Daniel Gelman, Amir Szitenberg, Elyashiv Drori, Ania Pinkus, Miriam Schoemann, Rachel Kaplan, Tziona Ben-Gedalya, Shunit Copenhagen-Glazer, Eli Reich, Amijai Saragovi, Oded Lipschits, Michael Klutstein, Ronen Hazan

Ancient fermented food has been studied based on recipes, residue analysis, and ancient-DNA techniques and reconstructed using modern domesticated yeast. Here, we present a novel approach based on our hypothesis that enriched yeast populations in fermented beverages could have become the dominant species in storage vessels and their descendants could be isolated and studied today. We developed a pipeline of yeast isolation from clay vessels and screened for yeast cells in beverage-related and non-beverage-related ancient vessels and sediments from several archaeological sites. We found that yeast cells could be successfully isolated specifically from clay containers of fermented beverages. The findings that genotypically the isolated yeasts are similar to those found in traditional African beverages and phenotypically they grow similar to modern beer-producing yeast strongly suggest that they are descendants of the original fermenting yeast. These results demonstrate that modern microorganisms can serve as a new tool in bio-archaeology research.

Keywords: ancient fermented food and beverages | ancient pottery vessels | beer | bio-archaeology | experimental archaeology | yeasts

BEHR 2019

Whitney Behr, *Earth's evolution explored*. [nature 570 \(2019\), 38–39](#).

A study provides evidence for the unconventional idea that the advent and evolution of plate tectonics on Earth were related to the rise of continents and to sediment accumulation at continental edges and in trenches.

Earth is the only planet in the Solar System that shows a form of planetary evolution known as plate tectonics. [...] Why planetary cooling on Earth operates in this mode, and when the current period of plate tectonics began, remain subject to debate^{1–3}. On page 52, Sobolev and Brown⁴ propose answers to these questions that could have fundamental implications for understanding the connections between internal dynamics and surface processes — including climatic and atmospheric processes — on Earth and other planets.

HARIHARAN 2019

Janani Hariharan, *Uncovering the hidden curriculum*. [science 364 \(2019\), 702](#).

I walked up to the professor, heart pounding. “Could we talk about the group discussions?” I asked hesitantly. Much of my grade for the course, a prerequisite for my master’s degree, depended on my performance in those discussions. But I

had a hard time speaking up, and when I did, everyone—including the instructor—seemed to disagree with me. I wanted to do better, but I didn't know how. I had arrived in the United States from India just a few months earlier, and I did not know what was expected of me or how the academic system operated. I was confused and desperate for help.

SOBOLEV 2019

Stephan V. Sobolev & Michael Brown, *Surface erosion events controlled the evolution of plate tectonics on Earth*. [nature](#) **570** (2019), 52–57.
[n570-0052-Supplement.pdf](#)

Plate tectonics is among the most important geological processes on Earth, but its emergence and evolution remain unclear. Here we extrapolate models of present-day plate tectonics to the past and propose that since about three billion years ago the rise of continents and the accumulation of sediments at continental edges and in trenches has provided lubrication for the stabilization of subduction and has been crucial in the development of plate tectonics on Earth. We conclude that the two largest surface erosion and subduction lubrication events occurred after the Palaeoproterozoic Huronian global glaciations (2.45 to 2.2 billion years ago), leading to the formation of the Columbia supercontinent, and after the Neoproterozoic ‘snowball’ Earth glaciations (0.75 to 0.63 billion years ago). The snowball Earth event followed the ‘boring billion’—a period of reduced plate tectonic activity about 1.75 to 0.75 billion years ago that was probably caused by a shortfall of sediments in trenches—and it kick-started the modern episode of active plate tectonics.

Anthropologie

SÁNCHEZ-VILLAGRA 2019

Marcelo R. Sánchez-Villagra & Carel P. van Schaik, *Evaluating the self-domestication hypothesis of human evolution*. [Evolutionary Anthropology](#) **28** (2019), 133–143.

“Self-domestication” has been invoked to understand important aspects of human evolution, integrating physiological, behavioral, and morphological information in a novel way. It proposes that selection for reduced aggression on animals undergoing domestication provides a model for selection favoring prosocial behaviors in humans and for a set of seemingly independent features, which arose as a result of developmental correlation. We review the history of the idea and examine patterns of domestication. A lack of empirical studies on evolutionary rates and variation thwarts meaningful comparison with domestication. The neural crest hypothesis for domestication has great explanatory power but it is difficult to test. We suggest a scenario in which the morphological byproducts of domestication can act as an honest signal of reduced xenophobia. Future studies should test if alternative explanations for the features deemed to result from self-domestication are mutually exclusive and generate data to test predictions of these hypotheses.

Keywords: modularity | rate | tameness | variation | violence

STOUT 2019

Dietrich Stout, Michael J. Rogers, Adrian V. Jaeggi & Sileshi Semaw, *Archaeology and the Origins of Human Cumulative Culture, A Case Study from the Earliest Oldowan at Gona, Ethiopia*. [Current Anthropology](#) **60** (2019), 309–340.

The capacity of *Homo sapiens* for the intergenerational accumulation of complex technologies, practices, and beliefs is central to contemporary accounts of human distinctiveness. However, the actual antiquity and evolutionary origins of cumulative culture are not known. Here we propose and exemplify a research program for studying the origins of cumulative culture using archaeological evidence. Our stepwise approach disentangles assessment of the observed fidelity of behavior reproduction from inferences regarding required learning mechanisms (e.g., teaching, imitation) and the explanation of larger-scale patterns of change. It is empirically grounded in technological analysis of artifact assemblages using well-validated experimental models. We demonstrate with a case study using a toolmaking replication experiment to assess evidence of behavior copying across three 2.6 Ma Oldowan sites from Gona, Ethiopia. Results fail to reveal any effects of raw material size, shape, quality, or reduction intensity that could explain the observed details of intersite technological variation in terms of individual learning across different local conditions. This supports the view that relatively detailed copying of toolmaking methods was already a feature of Oldowan technological reproduction at ca. 2.6 Ma. We conclude with a discussion of prospects and implications for further research on the evolution of human cumulative culture.

Bibel

ARIE 2019

Eran Arie, *Pomegranate and Poppy-Capsule Headings from Ivory and Bone in the Late Bronze and Iron Ages, Putting the Famous Inscribed Ivory Pomegranate in Context*¹. [Israel Museum Studies in Archaeology](#) **9** (2019), 2–39.

After surveying more than ninety examples of ivory/bone pomegranate and poppy-capsule headings, I now look at the famous inscribed Iron Age ivory pomegranate from the Israel Museum's Collection. Its size and shape, a pomegranate in its blossom stage, testifies to its LBA date, yet according to paleographic considerations the inscription incised on its shoulder is dated to the eighth century BCE. It seems unlikely that such an object would have been in use for centuries and be inscribed with a dedicatory inscription 500 years after it was produced. Moreover, to this day, this is the only inscribed pomegranate from this group. There is no doubt that the conclusions of this article support the result of the committee that dealt with the authenticity of the inscribed pomegranate. Whereas the pomegranate itself is genuine and dates to the LBA, its inscription is a modern fake. The person who incised the fake inscription (who probably knew about the ivory pomegranates from the Fosse Temple at Lachish) failed to realize that only a small number of these items were found in cultic contexts. Therefore, this sensational inscription was designed to try to link the pomegranate to the cultic sphere. The pomegranate (with its lost shaft) was never used as a scepter by a priest or as anything related to the Temple in Jerusalem. This mistaken modern interpretation should now be rejected.

Datierung

WENINGER 2019

Bernhard Weninger, *The First Book of Incomplete ¹⁴C-Site Chronologies from Europe, the Near East, and North-Afrika, First Edition 28th*

May 2019: *Holocene Site Chronologies*. [unknown \(2019\)](#), preprint, 1–77.

As illustrated in the following General-Purpose-Catalogue of 14C-dated sites from Europe, the Near East and North Africa, the newly developed method of Barcode Sequencing (BS) has certain merits for large-scale 14C-data processing, and it may possibly be used in (partial) replacement of presently more popular analytical methods such as Bayesian Sequencing and Wiggle-matching. However, strictly speaking, BS is actually not a dating method, at least not in the sense that any of the variables are optimised (e.g. in terms of precision or accuracy). It is rathermore a timing technology.

Klima

PRITCHARD 2019

Hamish D. Pritchard, *Asia's shrinking glaciers protect large populations from drought stress*. [nature 569 \(2019\)](#), 649–654.

n545-0169-Pritchard.pdf

About 800 million people depend in part on meltwater from the thousands of glaciers in the high mountains of Asia. Water stress makes this region vulnerable to drought, but glaciers are a uniquely drought-resilient source of water. Here I show that seasonal glacier meltwater is equivalent to the basic needs of 221 ± 59 million people, or most of the annual municipal and industrial needs of Pakistan, Afghanistan, Tajikistan, Turkmenistan, Uzbekistan and Kyrgyzstan. During drought summers, meltwater dominates water inputs to the upper Indus, Aral and Chu/Issyk-Kul river basins. This reduces the risk of social instability, conflict and sudden migrations triggered by water scarcity, which is already associated with the large, rapidly growing populations and hydro-economies of these basins. Regional meltwater production is, however, unsustainably high—at 1.6 times the balance rate—and is expected to increase in future decades before ultimately declining. These results update and reinforce a previous publication in Nature on this topic, which was retracted after an inadvertent error was discovered.

WU 2017

Jiawang Wu, Zhifei Liu, Jan-Berend W. Stuut, Yulong Zhao, Antonio Schirone & Gert J. de Lange, *North-African paleodrainage discharges to the central Mediterranean during the last 18,000 years, A multiproxy characterization*. [Quaternary Science Reviews 163 \(2017\)](#), 95–95.

qsr163-0095-Supplement.xlsx

Using elemental geochemistry, clay mineralogy, grain size end-member modeling, and planktonic foraminiferal $\delta^{18}\text{O}$, we characterize the provenance of central-Mediterranean sediments over the past 18 ka. The provenance is dust-dominated before and after the African Humid Period (AHP). By contrast, during the AHP (≈ 11 –5 ka), largely concurrent with organic-rich sapropel S1 formation, it is predominantly riverine from North-African sources. Such fluvial supply is suggested to come from paleodrainage networks that were reactivated by intensified monsoon precipitation during the AHP. The supply is characterized by high Mg/Al and smectite contents, and has been accompanied by considerable freshwater influx, as indicated by the enhanced grain size and lighter foraminiferal $\delta^{18}\text{O}$. The clay-mineral assemblages in our core and in nearby cores correspond with a provenance from the Libyan-Tunisian margin, mainly via the paleo-river Irharhar. The inferred fluvial discharge is strongest during the late-AHP (≈ 8 –5.5 ka), coinciding with reported enhanced fluvial dynamics and wettest conditions over western Libya and Tunisia/Algeria. This period is not only synchronous with the largest extension

of open-water bodies in North Africa and lowest Saharan dust inputs, but also consistent with precipitation records of the West-African monsoon. Moreover, our records show a remarkable correspondence with that of a paleodrainage system towards the Atlantic-West-African margin, inferring a common headwater region in the central Saharan mountains, and a similar climate mechanism. Taken together, we suggest a dominant control of North-African humid surfaces on the paleodrainage delivery, modulated by groundwater level, in response to the insolation-driven West-African monsoon precipitation.

Keywords: Quaternary | Paleoclimatology | North Africa | Inorganic geochemistry | Clay minerals | Grain size end-member modeling | African humid period | Sapropel S1 | Provenance | Paleodrainage systems

Kultur

BOYES 2019

Philip J. Boyes, *Negotiating Imperialism and Resistance in Late Bronze Age Ugarit, The Rise of Alphabetic Cuneiform*. [Cambridge Archaeological Journal](#) **29** (2019), 185–199.

Ugarit was a highly cosmopolitan, multilingual and multiscript city at the intersection of several major Late Bronze Age political and cultural spheres of influence. In the thirteenth century BC, the city adopted a new alphabetic cuneiform writing system in the local language for certain uses alongside the Akkadian language, script and scribal practices that were standard throughout the Near East. Previous research has seen this as ‘vernacularization’, in response to the city’s encounter with Mesopotamian culture. Recent improvements in our understanding of the date of Ugarit’s adoption of alphabetic cuneiform render this unlikely, and this paper instead argues that we should see this vernacularization as part of Ugarit’s negotiation of, and resistance to, their encounter with Hittite imperialism. Furthermore, it stands as a specific, Ugaritian, manifestation of similar trends apparent across a number of East Mediterranean societies in response to the economic and political globalism of Late Bronze Age elite culture. As such, these changes in Ugaritian scribal practice have implications for our wider understanding of the end of the Late Bronze Age.

LEPPARD 2019

Thomas P. Leppard, *Social Complexity and Social Inequality in the Prehistoric Mediterranean*. [Current Anthropology](#) **60** (2019), 283–308.

The complex urban polities developed in the Old World (5500–3500 BP) had several structural features in common, particularly their scale, their cereal agrarianism, and their environmental patterning. Accordingly, the demographic weight borne by agrarian subsistence in these environments is causally associated with emergent social complexity. Yet other Old World contexts also witness the Mid-Late Holocene emergence of socially complex societies, contexts that differ radically from those of the pristine states in their environmental organization. How can we account for this? I suggest that the model developed by Thomas Piketty, in his analysis of emergent wealth inequality in late modernity, has an unappreciated applicability in explaining the development of unequal social systems at larger time scales. I argue that Mediterranean environments are equivalent to the low-growth environments that he demonstrates exaggerate the speed at which wealth inequality grows. This has explanatory potential in the context of the otherwise problematic appearance of social complexity in low-growth environments, which,

on the basis of current models orbiting around surplus, we might expect to discourage such emergence. Recognizing that highly varied ecological and economic pathways can lead to ostensibly very similar outcomes poses challenges to how we model emergent complexity in comparative perspective.

STIBBARD-HAWKES 2019

Duncan N. E. Stibbard-Hawkes, *Costly signaling and the handicap principle in hunter-gatherer research, A critical review*. *Evolutionary Anthropology* **28** (2019), 144–157.

It has been argued that men's hunting in many forager groups is not, primarily, a means of family provisioning but is a costly way of signaling otherwise cryptic qualities related to hunting ability. Much literature concerning the signaling value of hunting draws links to Zahavi's handicap principle and the costly signaling literature in zoology. However, although nominally grounded in the same theoretical paradigm, these literatures have evolved separately. Here I review honest signaling theory in both hunter-gatherer studies and zoology and highlight three issues with the costly signaling literature in hunter-gather studies: (a) an overemphasis on the demonstration of realized costs, which are neither necessary nor sufficient to diagnose costly signaling; (b) a lack of clear predictions about what specific qualities hunting actually signals; and (c) an insufficient focus on the broadcast effectiveness of hunting and its value as a heuristics for signal recipients. Rather than signaling hunting prowess, hunting might instead facilitate reputation-building.

Keywords: costly signaling | food sharing | Hamilton-Zuk | handicap principle | honest signaling | hunting

Neolithikum

SCHROEDER 2019

Hannes Schroeder, Niels N. Johannsen & Morten E. Allentoft et al., *Unraveling ancestry, kinship, and violence in a Late Neolithic mass grave*. *PNAS* **116** (2019), 10705–10710.

[pnas116-10705-Supplement.pdf](#)

Hannes Schroeder, Ashot Margaryan, Marzena Szmyt, Bertrand Theulot, Piotr Włodarczak, Simon Rasmussen, Shyam Gopalakrishnan, Anita Szczepanek, Tomasz Konopka, Theis Z. T. Jensen, Barbara Witkowska, Stanisław Wilk, Marcin M. Przybyła, Łukasz Pospieszny, Karl-Göran Sjögren, Zdzisław Belka, Jesper Olsen, Kristian Kristiansen, Eske Willerslev, Karin M. Frei, Martin Sikora, Niels N. Johannsen & Morten E. Allentoft

The third millennium BCE was a period of major cultural and demographic changes in Europe that signaled the beginning of the Bronze Age. People from the Pontic steppe expanded westward, leading to the formation of the Corded Ware complex and transforming the genetic landscape of Europe. At the time, the Globular Amphora culture (3300–2700 BCE) existed over large parts of Central and Eastern Europe, but little is known about their interaction with neighboring Corded Ware groups and steppe societies. Here we present a detailed study of a Late Neolithic mass grave from southern Poland belonging to the Globular Amphora culture and containing the remains of 15 men, women, and children, all killed by blows to the head. We sequenced their genomes to between 1.1- and 3.9-fold coverage and performed kinship analyses that demonstrate that the individuals belonged to a large extended family. The bodies had been carefully laid out according to kin relationships by someone who evidently knew the deceased. From a population genetic viewpoint, the people from Koszyce are clearly distinct

from neighboring Corded Ware groups because of their lack of steppe-related ancestry. Although the reason for the massacre is unknown, it is possible that it was connected with the expansion of Corded Ware groups, which may have resulted in competition for resources and violent conflict. Together with the archaeological evidence, these analyses provide an unprecedented level of insight into the kinship structure and social behavior of a Late Neolithic community.

Keywords: ancient DNA | archaeology | kinship | migration | violence

Significance: We sequenced the genomes of 15 skeletons from a 5,000-y-old mass grave in Poland associated with the Globular Amphora culture. All individuals had been brutally killed by blows to the head, but buried with great care. Genome-wide analyses demonstrate that this was a large extended family and that the people who buried them knew them well: mothers are buried with their children, and siblings next to each other. From a population genetic viewpoint, the individuals are clearly distinct from neighboring CordedWare groups because of their lack of steppere-related ancestry. Although the reason for the massacre is unknown, it is possible that it was connected with the expansion of Corded Ware groups, which may have resulted in violent conflict.

Sprachlehre

HOROWITZ 2006

Maurice Horowitz, *Précis de grammaire hébraïque, Le guide de l'hébraïsant égaré*. (Paris 2006).

Story or Book

MCEUEN 2019

Paul McEuen, *A digital god, Neal Stephenson rides again*. [nature 570 \(2019\), 33–34](#).

Heaven is in the Cloud in the prolific science-fiction writer's new tome. Paul McEuen watches in wonder.

Fall; or, Dodge in Hell. Neal Stephenson. William Morrow (2019)

As its god, Dodge recreates himself out of the nothingness of the digital void before building a virtual cosmos (as a video-game designer, he knows the ropes). Others join him as they die and are scanned, leaving "Meatspace" (the world of the living) behind. There are twists and turns, and many mythic tales and conflicts are re-enacted.

Much of the focus remains on Meatspace and the challenges faced by those left behind to maintain and understand the workings of the digital heaven they've created. This is one of the most interesting aspects of Fall. Their tools for seeing into it are imperfect, monitoring the communication between the various sub-processes distributed across a network of computing platforms (yes, Heaven is in the Cloud). Ultimately, they become obsessed with Dodge's constructed reality and it becomes a kind of Truman Show, where you can join the cast if you're rich enough to be scanned and are willing to die.