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References

Aktuell

Braun 2019

David R. Braun et al., *Technology and geochronology at the earliest known Oldowan site at Ledi-Geraru, Ethiopia*, *Reply to Sahle and Gossa*. PNAS **116** (2019), 20261–20262.

David R. Braun, Vera Aldeias, Will Archer, J. Ramon Arrowsmith, Niguss Baraki, Christopher J. Campisano, Alan L. Deino, Erin N. DiMaggio, Guillaume Dupont-Nivet, Blade Engda, David A. Feary, Dominique I. Garello, Zenash Kerfelew, Shannon P. McPherron, David B. Patterson, Jonathan S. Reeves, Jessica C. Thompson & Kaye E. Reed

Brodsky 2019

Emily E. Brodsky, *Predicting if the worst earthquake has passed*. nature **574** (2019), 185–186.

When a big earthquake occurs, it is hard to tell if it will be followed by a larger quake or by only smaller ones. A method has been developed that aims to distinguish between these scenarios while events are still unfolding.

Heaven 2019

Douglas Heaven, *Deep Trouble For Deep Learning*. nature **574** (2019), 163–166.

Artificial-intelligence researchers are trying to fix the flaws of neural networks.

Mao 2019

Yumeng Mao, *What industry can teach academia*. science **365** (2019), 1342.

When I was considering a job with a pharmaceutical company after my postdoc, many of my academic colleagues and mentors were dubious. “You have to think this through very carefully,” one said. Some worried that my research progress would stall; others warned that my industry experience would be no help—and might even be a drawback—if I ever decided to apply for academic positions. But I had enjoyed collaborating with industry scientists, and I was curious to find out more about how treatments were developed from basic research. So I accepted the job. Now, 3 years later and contrary to my colleagues’ predictions, I’m making the switch back to academia—where I think my industry experience will serve me well.

Moore 2019

Catrin E. Moore, *Changes in antibiotic resistance in animals*. science **365** (2019), 1251–1252.

Surveys in low- and middle-income countries reveal emerging hotspots of resistance.

Rugenstein 2019

Svetlana Botsyun, Pierre Sepulchre, Yannick Donnadieu, Camille Risi, Alexis Licht & Jeremy K. Caves Rugenstein, *Revised paleoaltimetry*

data show low Tibetan Plateau elevation during the Eocene, Response to Comment. science **365** (2019), 1258.

Valdes et al. contest our results, suggesting failings in our modeling approach as well as in our comparison with data. Although their comment points to interesting ideas of improvement, we find that their critique reflects an incomplete understanding of our methods and is not supported by the material they provide.

Sahle 2019

Yonatan Sahle & Tegenu Gossa, *More data needed for claims about the earliest Oldowan artifacts*. PNAS **116** (2019), 20259–20260.

Service 2019

Robert F. Service, *Renewable Bonds*. science **365** (2019), 1236–1239.

With solar and wind booming, the chemical industry dabbles with forgoing petroleum as its feedstock.

"In the near future there will be a bunch of renewable electrons around," says Edward Sargent, a chemist at the University of Toronto in Canada. "And a lot of them are going to be cheap."

One major hurdle, he notes, is that renewables are intermittent, meaning chemical plants relying on them will be inefficient. Economists capture the idea with a measure called the capacity factor, a ratio of a plant's output over time compared with what's theoretically possible. Fossil fuel–powered chemical plants can run around the clock, although downtime for maintenance and for other issues typically reduces their capacity factor to about 60 %. But the inputs to a plant powered by renewables themselves have low capacity factors: Wind and hydropower typically come in just under 50 %, and solar drops to below 25 % because of nighttime and cloudy days. "Your full capacity is only being used for a few hours a day," says Harry Atwater, a chemist at Caltech and head of the Joint Center for Artificial Photosynthesis, a solar fuel collaboration among Caltech, Lawrence Berkeley National Laboratory, and other institutions. The upshot, Lewis notes, is that any plant powered by renewables would take longer to make a profit, making investors reluctant to back such projects. Plants driven by renewables could stay online longer if they drew on multiple power sources or had a steadier power supply thanks to batteries or another form of energy storage, Kammen notes. But those solutions can add cost, Lewis says.

Sokol 2019

Joshua Sokol, *Dust from asteroid breakup veiled and cooled Earth*. science **365** (2019), 1230.

Valdes 2019

Paul J. Valdes, Ding Lin, Alex Farnsworth, Robert A. Spicer, Shi-Hu Li & Su Tao, *Comment on "Revised paleoaltimetry data show low Tibetan Plateau elevation during the Eocene"*. science **365** (2019), 1258.

Botsyun et al. (Research Articles, 1 March 2019, eaaq1436) have suggested that the Tibetan Plateau was low (substantially less than 3000 meters) during the Eocene, based on a comparison of oxygen isotope proxy data with isotope-enabled climate model simulations. However, we contend that their conclusions are flawed as the result of a number of failings of both the modeling and the data comparison.

Anthropologie

Page 2019

Abigail E. Page, Sarah Myers, Mark Dyble & Andrea Bamberg Migliano, *Why so many Agta boys? Explaining 'extreme' sex ratios in Philippine foragers.* Evolutionary Human Sciences **1** (2019), e5. DOI:10.1017/ehs.2019.4.

EvolHumSc01-e005-Supplement.pdf

Male-biased sex ratios have been observed in multiple small-scale societies. Although intentional and systematic female-biased mortality has been posited as an explanation, there is often a lack of ethnographic evidence of systematic female neglect and/or infanticide. The Agta, a foraging population from the Philippines, have a skewed sex ratio of 1.29 (129 males per 100 females) aged 15 years or under. We hypothesised that this skew was not caused by greater female deaths, but due to an adaptive response, where more males were produced at birth in reaction to high male-biased extrinsic mortality. To test this hypothesis we utilise census, childcare and mortality data from 915 Agta. The Agta's sex ratio is significantly male-biased in the <1 (n = 48, 2:1) and 1–5 year (n = 170, 1.39:1) age cohorts; however, we find no evidence of systematic female neglect in patterns of childcare. Furthermore, the sex ratio decreases over cohorts, becoming balanced by the end of the juvenile period, owing to significantly higher male mortality. Taken together, these results are not supportive of female infanticide or neglect, and instead suggest an adaptive mechanism, acting in utero as a response to male-biased juvenile mortality, following Fisherian principles of equalising parental investment.

Keywords: Biased sex ratios | female-biased infanticide/neglect | male-biased mortality | hunter–gatherers | Agta

Price 2019

Michael Price, *Face of the mysterious Denisovans emerges.* science **365** (2019), 1232.

New method uses epigenetics to infer anatomy of Neanderthals' extinct cousins.

Bibel

Na'aman 2011

Nadav Na'aman, *The Exodus Story, Between Historical Memory and Historiographical Composition.* Journal of Ancient Near Eastern Religions **11** (2011), 39–69.

he article seeks to explain the contrast between the central place of the Exodus in Israelite memory and the marginality of the event in history by shifting the focus of discussion from the historical question to the role the Exodus tradition played in shaping the self-portrait and consciousness of early Israelite society. It irst examines the oppressive nature of Egyptian rule in Canaan at the time of the Nineteenth and Twentieth Dynasties. It then examines the story of the Exodus in the context of Egypt under the Ramesside and Saitic Dynasties. It suggests that the bondage and the delivery from slavery as related in the biblical story actually took place in Canaan and that the memories were later transferred from Canaan to Egypt. The transfer of memory explains the omission of the memory of the long Egyptian occupation of Canaan in the Bible. The displaced memories of bondage were replaced by the 'memory' of the conquest, which relects the way early Israelite society sought to present its past. The subjugation, the sufering and

the delivery were experienced by all tribal groups that lived at the time in Canaan, hence the centrality of the Exodus tradition within the Israelite society.

Keywords: Exodus | Canaan | Shasu | bondage | historical memory | collective memory

Biographie

Bonesteel 2019

Nick Bonesteel & Gregory Boebinger, *J. Robert Schrieffer (1931–2019)*. nature **574** (2019), 177.

Physicist who shared Nobel for theoretical basis of superconductivity.

Scalapino 2019

Douglas Scalapino & Steven Allan Kivelson, *John Robert Schrieffer (1931–2019), Codiscoverer of the theory of superconductivity*. science **365** (2019), 1253.

Biologie

Tóth 2019

Anikó B. Tóth et al., *Reorganization of surviving mammal communities after the end-Pleistocene megafaunal extinction*. science **365** (2019), 1305–1308.

s365-1305-Supplement.pdf

Large mammals are at high risk of extinction globally. To understand the consequences of their demise for community assembly, we tracked community structure through the end-Pleistocene megafaunal extinction in North America. We decomposed the effects of biotic and abiotic factors by analyzing co-occurrence within the mutual ranges of species pairs. Although shifting climate drove an increase in niche overlap, co-occurrence decreased, signaling shifts in biotic interactions. Furthermore, the effect of abiotic factors on co-occurrence remained constant over time while the effect of biotic factors decreased. Biotic factors apparently played a key role in continental-scale community assembly before the extinctions. Specifically, large mammals likely promoted co-occurrence in the Pleistocene, and their loss contributed to the modern assembly pattern in which co-occurrence frequently falls below random expectations.

Anikó B. Tóth, S. Kathleen Lyons, W. Andrew Barr, Anna K. Behrensmeyer, Jessica L. Blois, René Bobe, Matt Davis, Andrew Du, Jussi T. Eronen, J. Tyler Faith, Danielle Fraser, Nicholas J. Gotelli, Gary R. Graves, Advait M. Jukar, Joshua H. Miller, Silvia Pineda-Munoz, Laura C. Soul, Amelia Villaseñor & John Alroy

Datierung

Kleiman 2019

Assaf Kleiman, Alexander Fantalkin, Hans Mommsen & Israel Finkelstein, *The Date and Origin of Black-on-Red Ware, The View from Megiddo*. American Journal of Archaeology **123** (2019), 531–555.

Our study of Black-on-Red sherds found in well-stratified Iron IIA contexts at Megiddo shows that the earliest examples of this ware appear in an early stage of the Late Iron IIA, radiocarbon dated to the late 10th to early ninth century B.C.E. An archaeometric analysis of 10 sherds reveals that they were manufactured in Cyprus, meaning that Black-on-Red vessels were produced on the island as early as ca. 900 B.C.E. This makes Gjerstad's theory regarding the "Levantine Phase" in the production history of this ware obsolete. It is noteworthy that Black-on-Red vessels of Type IV (dated to the eighth and early seventh centuries B.C.E. based on stylistic considerations) are present in secure contexts in levels Q-5 and Q-4 at Megiddo, radiocarbon dated to the late 10th and ninth centuries B.C.E.

Nigro 2019

Lorenzo Nigro, *Archaeological Periodization vs Absolute Chronology, What Does Not Work With High and Low Early Bronze Age in Southern Levant*. In: Elisabetta Gallo (Hrsg.), *Conceptualizing Urban Experiences – Tell es-Sultan and Tall al-Ḥammam – Early Bronze cities across the Jordan, Proceedings of a workshop held in Palermo, G. Whitaker Foundation, Villa Malfitano, June 19th 2017*. ROSAPAT 13 (Rome 2019), 1–46.

The comparison of two sites of Tell es-Sultan and Tall al-Hammam, facing each other on the opposite sides of the Jordan, needs a reliable cultural and chronological correlation. Something which has been pursued by archaeologists with different methods and approaches: synchronization in time and culture is never easy. This leads to the issue of relative and absolute chronology. A recent reassessment of Early Bronze Age absolute chronology of Syria-Palestine, stemmed from a reexamination of available radiocarbon datings and from stratigraphic intersites correlations, poses more problems than it solves. There is a basic problem of method: to keep stratigraphy, periodization, absolute dating and cultural interpretation separated. It often happens that the latter is confused with periodization. This has deeply-rooted reasons, but it is time for archaeology to introduce a tool to distinguish periods – that are time quantities – from cultural horizons; this tool is here defined as "cultural genome". The sequence of Tell es-Sultan, for its completeness, spatial and chronological extension and rate of publication, can be used as a reference for the whole Early Bronze Age in Southern Levant. This paper suggests how to use it.

Keywords: chronology | Jericho | Early Bronze Age | Egypt | urbanization

Wild 2004

Eva Maria Wild et al., *Neolithic Massacres: Local Skirmishes Or General Warfare In Europe?* Radiocarbon **46** (2004), 377–385.

The Neolithic site of Schletz in Lower Austria comprises a fortified settlement from the end of the Linearbandkeramik (LBK) culture. Large numbers of human bones were found at the base of the fortification ditches, and many of the excavated bones and skulls showed evidence of trauma which most likely originates from violence. This remarkable deposit of human remains has been considered evidence for an abrupt end to the Early Neolithic settlement at Schletz. In order to investigate this interpretation, radiocarbon accelerator mass spectrometry (AMS) measurements of human bone samples from this site were performed at VERA. The x2 test of the results from specimens with clearly identified lesions suggests that these may be contemporaneous. Further, it may be concluded that all individuals with evidence of trauma from Schletz were probably the victims of a single event: a massacre at the end of the LBK.

Eva Maria Wild, Peter Stadler, Annemarie Hauser, Walter Kutschera, Peter Steier, Maria Teschler-Nicola, Joachim Wahl & Helmut J. Windl

Judentum

Oz 2017

Amos Oz, *Jesus und Judas, Ein Zwischenruf.* (Ostfildern [4]2019).

Scherman 1980

Nosson Scherman, קדיש = *The Kaddish prayer, A new translation with a commentary anthologized from Talmudic, Midrashic, and rabbinic sources.* Artscroll Mesorah (Brooklyn [3]1991).

Kultur

Charlton 2019

Sophy Charlton et al., *New insights into Neolithic milk consumption through proteomic analysis of dental calculus.* Archaeological and Anthropological Sciences (2019), preprint, 1–14. DOI:10.1007/s12520-019-00911-7.

ArchAnthSci2019.10-Charlton-Supplement1.fasta, ArchAnthSci2019.10-Charlton-Supplement2.docx

There has long been debate over the origins of dairy consumption within European populations. Whilst it was previously assumed that lactase persistence (LP) was under positive selection following the advent of agriculture, recent genetic studies of prehistoric human remains have revealed LP may have only emerged in Europe in the last 4000 years. These findings stand in contrast to organic residue analysis of Neolithic pottery indicating the utilisation of dairy products, and zooarchaeological mortality profiles consistent with dairying herds at Neolithic sites. The recent discovery of the milk protein b-lactoglobulin (BLG) within human dental calculus presents a new method via which to explore dairy product consumption in the archaeological past. Here, we apply shotgun proteomic analysis to dental calculus samples from three British Neolithic sites, revealing the earliest identification of BLG in human dental calculus to date. The presence of BLG peptides in individuals who are unlikely to possess LP provides new insight into dairying in the British Neolithic, suggesting the potential processing of milk by Neolithic populations to reduce the lactose content of dairy products.

Sophy Charlton & Abigail Ramsøe & Matthew Collins & Oliver E. Craig & Roman Fischer & Michelle Alexander & Camilla F. Speller

Keywords: Dairying | β-lactoglobulin | Dental calculus | Neolithic | Britain

Diamond 2019

Jared Diamond, *Upheaval, How Nations Cope with Crisis and Change.* (London 2019).

Dunne 2019

J. Dunne, K. Rebay-Salisbury, R. B. Salisbury, A. Frisch, C. Walton-Doyle & R. P. Evershed, *Milk of ruminants in ceramic baby bottles from prehistoric child graves.* nature **574** (2019), 246–248.

The study of childhood diet, including breastfeeding and weaning, has important implications for our understanding of infant mortality and fertility in past societies1. Stable isotope analyses of nitrogen from bone collagen and dentine samples of infants have provided information on the timing of weaning2; however, little is known about which foods were consumed by infants in prehistory. The earliest known clay vessels that were possibly used for feeding infants appear in Neolithic Europe, and become more common throughout the Bronze and Iron Ages. However, these vessels—which include a spout through which liquid could be poured—have also been suggested to be feeding vessels for the sick or infirm3,4. Here we report evidence for the foods that were contained in such vessels, based on analyses of the lipid 'fingerprints' and the compound-specific d13C and D13C values of the major fatty acids of residues from three small, spouted vessels that were found in Bronze and Iron Age graves of infants in Bavaria. The results suggest that the vessels were used to feed infants with milk products derived from ruminants. This evidence of the foodstuffs that were used to either feed or wean prehistoric infants confirms the importance of milk from domesticated animals for these early communities, and provides information on the infant-feeding behaviours that were practised by prehistoric human groups.

Friesem 2019

David E. Friesem, Itay Abadi, Dana Shaham & Leore Grosman, *Lime plaster cover of the dead 12,000 years ago, New evidence for the origins of lime plaster technology*. Evolutionary Human Sciences **1** (2019), e9. DOI:10.1017/ehs.2019.9.

The production of lime plaster is especially important as a technological development in human prehistory as it requires advanced knowledge and skills to transform rocks to a plastic yet durable material. The large-scale production of lime plaster is considered a development of farming societies during the Neolithic period around 10,000 years ago. To date, the archaeological evidence from the Middle and Late Epipalaeolithic in the southern Levant (c. 17,000–11,500 cal BP) indicates that only initial production of partially carbonated lime plaster was performed by Palaeolithic foragers. Our study analysed lime plaster covering burials at a Natufian cemetery in Nahal Ein Gev II, dating to 12,000 years ago. Using infrared spectroscopy and soil micromorphology we show how this lime plaster is of an unprecedented high quality and we reconstruct its production. The results exhibit a technological leap forward at the end of the Palaeolithic. We provide a new model for understanding the evolutionary paths of lime plaster technology during the Palaeolithic–Neolithic transition.

Keywords: Lime plaster | Natufian | burial | pyrotechnology | southern Levant

Halcrow 2019

Siân E. Halcrow, *Early European babies bottle-fed animal milk*. nature **574** (2019), 182–183.

The foods used to supplement or replace breast milk in infants' diets in prehistoric times aren't fully understood. The finding that ancient feeding vessels from Europe had residues of animal milk offers a clue.

Metallzeiten

Mühlenbruch 2017

Tobias Mühlenbruch, *Zur "sozialen Ungleichheit" in der mykenischen*

Palast- und Nachpalastzeit. Archäologisches Korrespondenzblatt **47** (2017), 153–171.

The presented article is concerned with the question to which extent "social inequality" can be detected by archaeological research on the Mycenaean culture of Southern Greece between 1400 and 1050 BC. This period is of special importance as it witnessed the destruction of the Mycenaean "palaces" around 1200 BC which marked a noticeable cultural change: early state structures with administration etc. ceased to exist, possibly, as the article suggests, due to social upheaval. Apart from written sources for the palatial period, primarily archaeological evidence is analysed. The study focusses on the Argolis with its large-scale excavated settlement of Tiryns. Translation: M. Struck

Der vorliegende Artikel beschäftigt sich mit der Frage, inwieweit "soziale Ungleichheit" für die archäologische Forschung zur mykenischen Kultur Südgriechenlands zwischen ca. 1400 und 1050 v. Chr. zu fassen ist. Der entsprechende Zeitraum ist deswegen von besonderer Bedeutung, da um 1200 v. Chr. die mykenischen "Paläste" zerstört wurden, was einen deutlichen kulturellen Wandel markierte: Frühstaatliche Strukturen mit Verwaltung etc. endeten, möglicherweise, wie diskutiert wird, durch soziale Unruhen. Neben den Schriftquellen, die für die Palastzeit vorliegen, werden vor allem die archäologischen Befunde ausgewertet. Dabei liegt der Fokus auf der Argolis mit der großflächig untersuchten Siedlung von Tiryns.

Mittelpaläolithikum

Hauck 2016

Thomas C. Hauck et al., *Neanderthals Or Early Modern Humans? A Revised ^{14}C Chronology and Geoarchaeological Study of the Szeletian Sequence in Szeleta Cave (Kom. Borsod-Abaúj-Zemplén) in Hungary*. Archäologisches Korrespondenzblatt **46** (2016), 271–290.

Renewed geoarchaeological research in Szeleta Cave shows that certain parts of the cave are intact whereas others are seriously modiied by post-sedimentary disturbance. Focusing archaeological research on the well-preserved sequences makes a formulation of new and more reliable age models possible for important cultural units. One such unit is the Szeletian for which Szeleta Cave is the eponymous site. The new AMS 14C data for the Szeletian sequence have implications for the modeling of population replacements during the MP to uP transition in Central Europe. The new dates lend support to the model that Neanderthals were the makers of the inal MP and the Szeletian in various Central European sites. The Early Aurignacian is in stead related to the appearance of modern humans in the same area. If the latest Central European MP over laps in age with the earliest UP, the co-existence of both human types is a valid scenario. The CologneAMS 14C dates show that the inal phase of the Bükk Mountain Szeletian in Hungary chronologically overlaps at least 3000 years with the Aurignacian in the same area. This in turn implies that the acculturation model is a possible explanation for the embedment of UP technology in a MP technological tradition (Allsworth-jones 1986; Hublin et al. 2012). In this respect, the Szeletian, which may have its roots in the local Micoquian, may be the latest cultural manifestation of Neanderthal populations that adopted UP innovations such as blade and bladelet technology as well as bone tool production. Consequently, the Szeletian can no longer be designated as "transitional" as the transition to the UP occurred elsewhere and there is no local evolution from the MP to the UP. A similar phenomenon seems to be observable in other parts of Europe as well between 50 and 40 ka.

Die Szeleta-Höhle nahe Miskolc ist der namengebende Fundort für das Szeletien. Dieser Technokomplex erscheint zur Zeit der letzten Neandertaler in Mitteleuropa und wird oft als "Übergangsindustrie" bezeichnet, da die Artefaktinventare eine Kombination mittelpaläolithischer und jungpaläolithischer Elemente aufweisen. Aus diesem Grund ist ein verlässliches Altersmodell für das Szeletien entscheidend für das Verständnis der Zeit des Verschwindens der Neandertaler und des Aufkommens anatomisch moderner Menschen und ihre mögliche Gleichzeitigkeit in Mitteleuropa. Bisher erschwerten ungenauigkeiten in der Datierungsmethodik und das Fehlen stratigraphischer Kontrolle bei der Probenentnahme eine genauere Altersbestimmung für das Szeletien in der Szeleta-Höhle. Aus diesem Grund blieb auch die Positionierung dieser wichtigen archäologischen Sequenz in Modellen, die den Übergang vom Neandertaler zum frühen modernen Menschen beschreiben, unklar. Wir erstellten deshalb ein neues Altersmodell für die Schichtenabfolge des Szeletien in Kombination mit geoarchäologischen Untersuchungen. Die neue Chronologie auf Basis von AMS 14C-Daten, gemessen an in situ gefundenen Höhlenbärenknochen und Holzkohlen, zeigt, dass das Szeletien nicht an den Übergang zum frühen jungpaläolithikum zu stellen ist, sondern gleichzeitig zu diesem existierte. Das Szeletien datiert in den gleichen Zeitraum wie das frühe Aurignacien in der Region. Während das Aurignacien dem frühen anatomisch modernen Menschen zugeschrieben wird, verbinden wir die Blattspitzen des Szeletien, die als wichtige kulturelle Erzeugnisse am Übergang vom Mittel- zum jungpaläolithikum gelten, mit den späten Neander talern.

Thomas C. Hauck, Janet Rethemeyer, Philippe Rentzel, Philipp Schulte, Stefan Heinze, Arpad Ringer, Jürgen Richter, Wei Chu, Frank Lehmkuhl & Oliver Vogels