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References

Aktuell

Bibic 2018

Lucka Bibic, *Learning to lead*. science **361** (2018), 1158.

About a year ago, I took on the best imaginary job out there: CEO of Cryo-Thaw, the finest company that never existed. I had come across a tweet announcing the 2017 Young Entrepreneurs Scheme competition, sponsored by the University of Nottingham with partners from the U.K. government and industry, in which teams form hypothetical startups based on feasible scientific ideas. As a graduate student unsure of my career plans, I was excited to explore outside academia. I also saw it as a way to develop my leadership skills. So, with the support of my supervisors and funders, I decided to give it a go. I recruited three other students, and we chose to focus on improving organ transplantation. I thought I had everything under control. I couldn't have been more wrong.

Couzin-Frankel 2018

Jennifer Couzin-Frankel, *Journals Under the Microscope*. science **361** (2018), 1180–1183.

"Journalologists" use scientific methods to study publishing. Is their work improving science?

Enserink 2018

Martin Enserink, *Evidence-based medicine group expels internal critic*. science **361** (2018), 1173–1174.

Cochrane is in turmoil after ousting co-founder Peter Gøtzsche, who accused it of becoming "industry-friendly".

Gøtzsche is known as a firebrand who is fiercely critical of the pharmaceutical industry and medical interventions he deems useless or harmful; he has likened the pharmaceutical industry to "organized crime." But he "has always been a very good scientist," Dickersin says. He "might be classified as an evidence-based medicine purist,"

Guglielmi 2018

Giorgia Guglielmi, *Peer-reviewed homeopathy study sparks uproar in Italy*. nature **562** (2018), 173–174.

Homeopathy advocates have championed the paper, but scientists doubt its claims.

Kwok 2018

Roberta Kwok, *Around the world*. nature **562** (2018), 295–297.

Magar 2018

Shital Magar et al., *Ultra-diluted Toxicodendron pubescens attenuates proinflammatory cytokines and ROS-mediated neuropathic pain in rats*. Scientific Reports **8** (2018), 13562. DOI:10.1038/s41598-018-31971-9.

Shital Magar, Deepika Nayak, Umesh B. Mahajan, Kalpesh R. Patil, Sachin D. Shinde, Sameer N. Goyal, Shivang Swaminarayan, Chandragouda R. Patil, Shreesh Ojha & Chanakya Nath Kundu

Despite the availability of multiple therapeutic agents, the search for novel pain management of neuropathic pain is still a challenge. Oxidative stress and inflammatory signaling are prominently involved in clinical manifestation of neuropathic pain. Toxicodendron pubescens, popularly known as Rhus Tox (RT) is recommended in alternative medicines as an anti-inflammatory and analgesic remedy. Earlier, we reported anti-inflammatory, anti-arthritic and immunomodulatory activities of Rhus Tox. In continuation, we evaluated antinociceptive efficacy of Rhus Tox in the neuropathic pain and delineated its underlying mechanism. Initially, in-vitro assay using LPS-mediated ROS-induced U-87 glioblastoma cells was performed to study the effect of Rhus Tox on reactive oxygen species (ROS), anti-oxidant status and cytokine profile. Rhus Tox decreased oxidative stress and cytokine release with restoration of anti-oxidant systems. Chronic treatment with Rhus Tox ultra dilutions for 14 days ameliorated neuropathic pain revealed as inhibition of cold, warm and mechanical allodynia along with improved motor nerve conduction velocity (MNCV) in constricted nerve. Rhus Tox decreased the oxidative and nitrosative stress by reducing malondialdehyde (MDA) and nitric oxide (NO) content, respectively along with up regulated glutathione (GSH), superoxide dismutase (SOD) and catalase activity in sciatic nerve of rats. Notably, Rhus Tox treatment caused significant reductions in the levels of tumor necrosis factor (TNF-á), interleukin-6 (IL-6) and interleukin-1â (IL-1â) as compared with CCI-control group. Protective effect of Rhus Tox against CCI-induced sciatic nerve injury in histopathology study was exhibited through maintenance of normal nerve architecture and inhibition of inflammatory changes. Overall, neuroprotective effect of Rhus Tox in CCI-induced neuropathic pain suggests the involvement of antioxidative and anti-inflammatory mechanisms.

Middleton 2018

Guy D. Middleton, *Bang or whimper?* science **361** (2018), 1204–1205.

The evidence for collapse of human civilizations at the start of the recently defined Meghalayan Age is equivocal.

Reich 2018

Peter B. Reich, Sarah E. Hobbie, Tali D. Lee & Melissa A. Pastore, *"Unexpected reversal of C4 versus C3 grass response to elevated CO_2 during a 20-year field experiment", Response to Comment.* science **361** (2018), 1082.

Nie and colleagues suggest a key role for interannual climate variation as an explanation for the temporal dynamics of an unexpected 20-year reversal of biomass responses of C3-C4 grasses to elevated CO2. However, we had already identified some climate-dependent differences in C3 and C4 responses to eCO2 and shown that these could not fully explain the temporal dynamics we observed.

Wanchisen 2018

Barbara A. Wanchisen, *Afraid to fail? Reach out.* science **361** (2018), 1278.

Many years ago, a trusted professor suggested I make a radical change in my academic path and pursue a doctorate in psychology. That sounded impossible! I was interested in the subject matter, but my training was in English and philosophy. I was petrified that seeking a science Ph.D. would bring rejection and

failure. For months, I looked into programs, only to get cold feet and back away—until my curiosity spurred me down the road again. Now, years after successfully completing my doctorate, I realize that I was actually facing two distinct fears during that tortured time. And I realize that I could have eased my path by seeking outside perspectives.

Anthropologie

Enard 2018

David Enard & Dmitri A. Petrov, *Evidence that RNA Viruses Drove Adaptive Introgression between Neanderthals and Modern Humans.* Cell **175** (2018), 360–371.

In Brief: Human genome evolution after Neanderthal interbreeding was shaped by viral infections and the resulting selection for ancient alleles of viralinteracting protein genes.

Highlights:

- Neanderthals and modern humans interbred and exchanged viruses
- Neanderthal DNA introgressed in modern humans helped them adapt against viruses
- Neanderthal DNA-based adaptation was particularly strong against RNA viruses in Europeans
- Ancient epidemics can be detected through the lens of abundant host genomic adaptation

Summary: Neanderthals and modern humans interbred at least twice in the past 100,000 years. While there is evidence that most introgressed DNA segments from Neanderthals to modern humans were removed by purifying selection, less is known about the adaptive nature of introgressed sequences that were retained. We hypothesized that interbreeding between Neanderthals and modern humans led to (1) the exposure of each species to novel viruses and (2) the exchange of adaptive alleles that provided resistance against these viruses. Here, we find that long, frequent—and more likely adaptive—segments of Neanderthal ancestry in modern humans are enriched for proteins that interact with viruses (VIPs). We found that VIPs that interact specifically with RNA viruses were more likely to belong to introgressed segments in modern Europeans. Our results show that retained segments of Neanderthal ancestry can be used to detect ancient epidemics.

Hodgson 2015

Derek Hodgson, *The symmetry of Acheulean handaxes and cognitive evolution.* Journal of Archaeological Science: Reports **2** (2015), 204–208.

The significance of symmetry to understanding the cognitive profile of the hominins responsible for making Acheulean handaxes has been contentious. Recent finds and analytical techniques have allowed a reassessment of the relevance of symmetry to evaluating the cognition of archaic humans by highlighting differences in the shape of Early to Late Acheulean bifaces. In this paper, I critically examine issues regarding the symmetry of handaxes as well as models of cognitive evolution that refer to the structure of Acheulean bifaces.

Keywords: Acheulean | Handaxes | Symmetry | Cognition | Evolution | Brain

Conclusion: Although the debate regarding the symmetry of Acheulean handaxes has been controversial, new techniques for gauging the shape of bifaces, aswell as some recent studies usingmore conventional approaches, suggest that symmetry is important to understanding the lifeways of Middle Pleistocene hominins. This

provides crucial support for symmetry as a non-functional trait of Acheulean handaxes and further downgrades the notion symmetry derived fromthe unintended consequences of tool production. As the social brain hypothesis predicts considerable cognitive sophistication, this implies that the ability to attend to the non-functional aspects of tool shape was present in H. heidelbergensis but was not always expressed due to a number of intervening variables, such as fluctuating population levels. Nevertheless, we still find that symmetry manifests either individually in the form of uniquely large handaxes or, at some sites, in a discernible tendency from earlier to later phases. These findings are matched by the raised level of self-awareness associated with level 4 intentionality that allows not only reflection about oneself in a social context but also the ability to reflect on materials with which one is engaged. Evidence from models of cognitive evolution suggests that the ability to intentionally produce symmetrical handaxes was well within the capacity of H. heidelbergensis (who benefited from a level of intentionality approaching 4), which is a proposition that has been, and continues to be, supported by recent studies of Acheulean assemblages. These observations suggest that the cognitive abilities of hominins during the Late Middle Pleistocene, as predicted by the theoretical models outlined, are recoverable from the lithic record and, in addition, demonstrate the usefulness of employing such models, which indicate that hominin capabilities have, in the past, been somewhat underestimated.

Roberts 2018

Patrick Roberts & Brian A. Stewart, *Defining the 'generalist specialist' niche for Pleistocene Homo sapiens*. Nature Human Behaviour **2** (2018), 542–550.

Definitions of our species as unique within the hominin clade have tended to focus on differences in capacities for symbolism, language, social networking, technological competence and cognitive development. More recently, however, attention has been turned towards humans' unique ecological plasticity. Here, we critically review the growing archaeological and palaeoenvironmental datasets relating to the Middle–Late Pleistocene (300–12 thousand years ago) dispersal of our species within and beyond Africa. We argue, based on comparison with the available information for other members of the genus Homo, that our species developed a new ecological niche, that of the 'generalist specialist'. Not only did it occupy and utilize a diversity of environments, but it also specialized in its adaptation to some of these environmental extremes. Understanding this ecological niche provides a framework for discussing what it means to be human and how our species became the last surviving hominin on the planet.

Bibel

Kaiser 1969

Otto Kaiser, *Einleitung in das Alte Testament, Eine Einführung in ihre Ergebnisse und Probleme*. (Gütersloh ^{4}1978).

Knauf 1994

Ernst Axel Knauf, *Die Umwelt des Alten Testaments*. Neuer Stuttgarter Kommentar – Altes Testament 29 (Stuttgart 1994).

Biologie

FULLER 2007

Dorian Q. Fuller, *Contrasting Patterns in Crop Domestication and Domestication Rates, Recent Archaeobotanical Insights from the Old World*. Annals of Botany **100** (2007), 903–924.

Background: Archaeobotany, the study of plant remains from sites of ancient human activity, provides data for studying the initial evolution of domesticated plants. An important background to this is defining the domestication syndrome, those traits by which domesticated plants differ from wild relatives. These traits include features that have been selected under the conditions of cultivation. From archaeological remains the easiest traits to study are seed size and in cereal crops the loss of natural seed dispersal.

Scope: The rate at which these features evolved and the ordering in which they evolved can now be documented for a few crops of Asia and Africa. This paper explores this in einkorn wheat (Triticum monococcum) and barley (Hordeum vulgare) from the Near East, rice (Oryza sativa) from China, mung (Vigna radiata) and urd (Vigna mungo) beans from India, and pearl millet (Pennisetum glaucum) from west Africa. Brief reference is made to similar data on lentils (Lens culinaris), peas (Pisum sativum), soybean (Glycine max) and adzuki bean (Vigna angularis). Available quantitative data from archaeological finds are compiled to explore changes with domestication. The disjunction in cereals between seed size increase and dispersal is explored, and rates at which these features evolved are estimated from archaeobotanical data. Contrasts between crops, especially between cereals and pulses, are examined.

Conclusions: These data suggest that in domesticated grasses, changes in grain size and shape evolved prior to non-shattering ears or panicles. Initial grain size increases may have evolved during the first centuries of cultivation, within perhaps 500–1000 years. Non-shattering infructescences were much slower, becoming fixed about 1000–2000 years later. This suggests a need to reconsider the role of sickle harvesting in domestication. Pulses, by contrast, do not show evidence for seed size increase in relation to the earliest cultivation, and seed size increase may be delayed by 2000–4000 years. This implies that conditions that were sufficient to select for larger seed size in Poaceae were not sufficient in Fabaceae. It is proposed that animal-drawn ploughs (or ards) provided the selection pressure for larger seeds in legumes. This implies different thresholds of selective pressure, for example in relation to differing seed ontogenetics and underlying genetic architecture in these families. Pearl millet (Pennisetum glaucum) may show some similarities to the pulses in terms of a lag-time before truly largergrained forms evolved.

Keywords: Domestication | cultivation | cereals | pulses | archaeobotany | Triticum | Hordeum | Oryza | Vigna | Pennisetum.

Energie

JUNG 2018

Christopher Jung & Dirk Schindler, *On the inter-annual variability of wind energy generation, A case study from Germany*. Applied Energy **230** (2018), 845–854.

Highlights:

- Methodology to quantify inter-annual variability of national wind energy generation.
- High-spatial resolution (200 m × 200 m) annual 3D wind field reconstruction.

- Estimation of (non)-exceedance probability of annual wind energy generation.
- Variation of annual wind energy generation between 67 and 112 TWh/yr.
- Variation of annual greenhouse gas mitigation between 45.6 and 76.3 Mio. tCO2-equiv.

Summary: The intermittent and stochastic nature of the wind resource complicates constant electricity supply in countries with high wind energy share in the electricity mix. Therefore, the goal of this study was to quantify the interannual variability of wind energy generation on the national scale by estimating upper and lower limits of annual wind energy generation (WEG). A novel methodology was developed and is presented for Germany, where onshore wind energy already accounts for more than 15 % of net electricity consumption. First, a comprehensive wind turbine data set was produced including all onshore wind turbines operating in 2017. Next, the wind speed-wind shear model (WSWS) was used to reconstruct the high spatial resolution (200 m × 200 m) annual wind speed distributions in the wind turbine hub height range 30–179m above ground level in the period 1979–2017. By using wind turbine-specific power curves, the annual wind energy yield was calculated for each wind turbine. It was summed up for the entire country, yielding WEG. Then, 16 theoretical distributions were fitted to WEG. From the fitted distributions, long-term return values of WEG were calculated. In a 100-year period (probability 98 %), WEG lies between 67 and 112 TWh/yr and the annual greenhouse gas mitigation potential varies between 45.6 and 76.3 Mio. tCO2-equiv. under current climate. The great WEG-range emphasizes the importance of considering upper and lower WEG-limits for ensuring constant electricity supply at the national scale.

Keywords: Wind speed-wind shear model | Return level | Wind turbine | Johnson SB distribution | Wind energy availability

Isotope

Blank 2018

Malou Blank, Karl-Göran Sjögren, Corina Knipper, Karin M. Frei & Jan Storå, *Isotope values of the bioavailable strontium in inland southwestern Sweden, A baseline for mobility studies.* PLoS ONE **13** (2018), e204649. DOI:10.1371/journal.pone.0204649.

The inland area of southwestern Sweden is well known for its well-preserved archaeological animal and human remains dating back to the Mesolithic and Neolithic (10000 ± 4000 and 4000 ± 1700 BC). They allow application of multiple bioarchaeological methods, giving insights into various and complementary aspects of prehistoric human life, as well as economic and social structures. One important aspect concerns human mobility and its relation to social networks and to circulation of objects. Here, strontium isotope analysis plays a crucial role. The present study aims to construct a strontium isotope baseline of southwestern Sweden with considerably greater coverage and higher resolution than previously published data. As the region has been affected by glacial events, the relation between bedrock geology and isotope signals of the bioavailable strontium in such areas is given special attention. We determined strontium isotope ratios for 61 water and five archaeological animal samples, and combined the data with previous measurements of two water and 21 non-domestic faunal samples. The results reveal a complex pattern. Several areas with distinct baseline ranges can be distinguished, although with overlaps between some of them. Overall, the bioavailable strontium isotope signals mirror the basement geology of the region. The highest ratios occur in the geologically oldest eastern parts of the Precambrian terrain, while lower ratios are

found in the western part, and the lowest ratios occur in the youngest Paleozoic areas. At the same time, there are minor deviations compared to the underlying bedrock, due to glacial transport, overlying sediments, and local intrusions of younger rocks. The background data set now available allows for more nuanced and detailed interpretations of human and animal mobility in the region, in particular by identification of subregions with differing strontium isotope ratios within the Precambrian province. Also, we can now identify long distance mobility with greater confidence.

Klima

Koll 2018

Daniel D. B. Koll & Timothy W. Cronin, *Earth's outgoing longwave radiation linear due to H_2O greenhouse effect*. PNAS **115** (2018), 10293–10298.

Satellite measurements and radiative calculations show that Earth's outgoing longwave radiation (OLR) is an essentially linear function of surface temperature over a wide range of temperatures (>60 K). Linearity implies that radiative forcing has the same impact in warmer as in colder climates and is thus of fundamental importance for understanding past and future climate change. Although the evidence for a nearly linear relation was first pointed out more than 50 y ago, it is still unclear why this relation is valid and when it breaks down. Here we present a simple semianalytical model that explains Earth's linear OLR as an emergent property of an atmosphere whose greenhouse effect is dominated by a condensable gas. Linearity arises from a competition between the surface's increasing thermal emission and the narrowing of spectral window regions with warming and breaks down at high temperatures once continuum absorption cuts off spectral windows. Our model provides a way of understanding the longwave contribution to Earth's climate sensitivity and suggests that extrasolar planets with other condensable greenhouse gases could have climate dynamics similar to Earth's.

Keywords: outgoing longwave radiation | climate change | climate feedback | planetary climate

Significance: Earth's climate is set by a balance between incoming solar and outgoing infrared radiation. The physical processes that influence this balance are complex and nonlinear, yet models and satellite measurements counterintuitively show that Earth's infrared radiation is simply a linear function of surface temperature. Here we explain why: Linearity is due to the cancellation of two nonlinear processes and always arises in an atmosphere dominated by a condensable greenhouse gas. Our work explains a fundamental property of Earth's climate and has implications for climate change as well as the climates of extrasolar planets with exotic greenhouse gases.

Langgut 2018

Dafna Langgut, Ahuva Almogi-Labin, Miryam Bar-Matthews, Nadine Pickarski & Mina Weinstein-Evron, *Evidence for a humid interval at 56–44 ka in the Levant and its potential link to modern humans dispersal out of Africa*. Journal of Human Evolution **124** (2018), 75–90.

This study provides a detailed reconstruction of the paleoenvironmental conditions that prevailed during one of the periods of modern human migration out of Africa and their occupation of the Eastern Mediterranean-Levant during the Late Middle Paleolithic-Early Upper Paleolithic. Tracing the past vegetation and climate within the Eastern Mediterranean-Levant region is largely based on a

southeastern Mediterranean marine pollen record covering the last 90 kyr (core MD-9509). The various palynomorphs were linked to distinct vegetation zones that were correlated to the two climate systems affecting the study area: the low-latitude monsoon system and the North Atlantic-Mediterranean climate system. The bioprovince palynological markers show that during the period between ≈56 and 44 ka, which covers the early part of Marine Isotope Stage 3 (MIS 3), there was an increase in transportation of pollen from Nilotic origin and a rise in dinoflagellate cyst ratios. These changes coincided with maximum insolation values at 65.N, which led to an enhancement in Nile River discharge into the Eastern Mediterranean following the intensification of the African monsoonal system. At the same time, the rise in Mediterranean arboreal pollen values (broadleaved, coniferous and deciduous temperate trees) is most likely driven by increased precipitation related to the intensification of the North Atlantic-Mediterranean climate system. The ≈56–44 ka wet event coincides with Dansgaard-Oeschger interstadials 14 and 12 and with a warming phase in the Levant, as evidenced by the melting of permafrost along the higher elevations of Mount Hermon. We suggest that African modern humans were able to cross the harsher arid areas due to the intensification of the monsoonal system during the first part of MIS 3, and inhabit the EasternMediterranean-Levant region where climatic conditions were favorable (wetter and warmer), even in the currently semiarid/steppe regions.

Keywords: Modern humans | Initial Upper Paleolithic | MIS 3 | Levant | Pollen | Middle-Upper Paleolithic transition

Kultur

David 2011

Wolfgang David, *Aenigma – Der rätselhafte Code der Bronzezeit, "Brotlaibidole" als Medium europäischer Kommunikation vor mehr als 3500 Jahren.* Mitteilungen der Freunde der Bayerischen Vor- und Frühgeschichte **130** (2011), 2–15.

Die Anordnung und Kombination der Linien und Eindrücke erfolgte offenbar nicht zufällig oder in beliebiger Weise. Vielmehr scheint eine Art System dahinter zu stehen. Regelhaftigkeiten lassen an ein Zeichensystem denken, möglicherweise zur Darstellung von Mengenangaben oder anderer Informationen. Tragen manche dieser Objekte gar eine Vorform der Schrift? Das Wissen um die Bedeutung der Zeichen ist verloren gegangen. Seit mehr als 100 Jahren ist der Sinngehalt der Zeichen und die Funktion dieser Objekte ein ungelöstes Rätsel der Archäologie.

Viele Brotlaibidole sind offenbar absichtlich zerbrochen worden und unvollständig überliefert. Die Fundumstände weisen sie als Gegenstände des alltäglichen Gebrauchs aus. Sie stammen aus Siedlungen, wobei ein Zusammenhang mit kultischen Aktivitäten nicht erkennbar ist. Eindeutige Belege aus Gräbern scheinen ebenfalls zu fehlen.

Hansen 2014

Rahlf Hansen & Christine Rink, *Die Zahlenkombination 32 / 33 als Indikator für einen plejadengeschalteten Lunisolarkalender.* In: Gudrun Wolfschmidt (Hrsg.), *Der Himmel über Tübingen, Barocksternwarten – Landesvermessung – Hochenergieastrophysik.* Nuncius Hamburgensis – Beiträge zur Geschichte der Naturwissenschaften 28 (Hamburg 2014), 400–431.

This article shows the pleiades' importance for the calendar, for determining feasts, for mythology and religion. We take a close look at texts, poems, symbols and numbers. The Pleiades' leap year rule is of great importance. What we call the "Ideal Situation" is the one when the first cresent of the moon corresponds with the last visibility of the Pleiades in the evening sky. During the time of Hammurabi the following full moon corresponded with the spring equinox. We present a chronology of Hammurabi with the "Ideal Situation" as basis. The movement of the "Ideal Situation" out of the spring month caused the so called "Pleiades shock". As a consequence of the "Pleiades shock" the monotheistic religions emerged.

Dieser Artikel zeigt die Bedeutung der Plejaden für den Kalender, die Festlegung der Feste, die Mythologie und die Religion. Wir betrachten Texte, Gedichte, Symbole und Zahlen. Sehr wichtig ist die Plejadenschaltregel. Wir nennen die Situation, wenn das Neulicht des Mondes mit der letzten Sichtbarkeit der Plejaden am Abendhimmel zusammenfällt, die "Idealsituation". Zu der Zeit von Hammurabi lag der folgende Vollmond am Frühlingsanfang. Die Idealsituation zugrunde legend, geben wir eine Chronologie für Hammurabi an. Die Bewegung der Idealsituation aus dem Frühlingsmonat hinaus führte zum "Plejadenschock". Als Konsequenz des Plejadenschocks erschienen die monotheistischen Religionen.

Langley 2018

Michelle C. Langley & Mirani Litster, *Is It Ritual? Or Is It Children? Distinguishing Consequences of Play from Ritual Actions in the Prehistoric Archaeological Record.* Current Anthropology **59** (2018), 616–643.

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This paper identifies a significant interpretive issue for prehistoric archaeology: distinguishing adult ritual actions from the activities of children in the archaeological record. Through examining ethnographic accounts of recent huntergatherer children and reconsidering archaeological patterns and assemblages in light of these data, we explore how the Results of children's play can be—and likely have been—misinterpreted by archaeologists as evidence for adult ritual behavior in prehistoric contexts. Given that children were a significant component of past hunter-gatherer (and other) societies, the fact that the material components of their activities overlap tremendously with items used in adult rituals must be routinely considered by archaeologists if we are to reconstruct robust understandings of past peoples all over the globe.

Comments by: Daniella E. Bar-Yosef Mayer, Jane Eva Baxter, Adam Brumm, Kathryn Kamp, Grete Lillehammer, Marlize Lombard

Mathematik Mittelpaläolithikum

Goldfield 2018

Anna E. Goldfield, Ross Booton & John M. Marston, *Modeling the role of fire and cooking in the competitive exclusion of Neanderthals.* Journal of Human Evolution **124** (2018), 91–104.

The Neanderthal body was more robust and energetically costly than the bodies of anatomically modern humans (AMH). Different metabolic budgets between competing populations of Neanderthals and AMH may have been a factor in the varied ranges of behavior and timelines for Neanderthal extinction that we see in the Paleolithic archaeological record. This paper uses an adaptation of the LotkaeVolterra model to determine whether metabolic differences alone could have accounted for Neanderthal extinction. In addition, we use a modeling approach to investigate

Neanderthal fire use, evidence for which is much debated and is variable throughout different climatic phases of the Middle Paleolithic. The increased caloric yield from a cooked versus a raw diet may have played an important role in population competition between Neanderthals and AMH. We arrive at two key conclusions. First, given differences in metabolic budget between Neanderthals and AMH and their dependence on similar or overlapping food resources, Neanderthal extinction is likely inevitable over the long term. Second, the rate of Neanderthal extinction increases as the frequency of AMH fire use increases. Results highlight the importance of understanding the variable behaviors at play on a regional scale in order to understand global Neanderthal extinction. We also emphasize the importance of understanding the role of fire use in the Middle to Upper Paleolithic transition.

Keywords: Paleolithic | Neanderthals | Anatomically modern humans | Pyrotechnology | Subsistence behavior | Ecological modeling

Mesolithikum

Liu 2018

Li Liu, Jiajing Wang, Danny Rosenberg, Hao Zhao, György Lengyel & Dani Nadel, *Fermented beverage and food storage in 13,000 y-old stone mortars at Raqefet Cave, Israel, Investigating Natufian ritual feasting.* Journal of Archaeological Science: Reports **21** (2018), 783–793.

Fermented and alcoholic beverages played a pivotal role in feastings and social events in past agricultural and urban societies across the globe, but the origins of the sophisticated relevant technologies remain elusive. It has long been speculated that the thirst for beer may have been the stimulus behind cereal domestication, which led to a major social-technological change in human history; but this hypothesis has been highly controversial. We report here of the earliest archaeological evidence for cereal-based beer brewing by a semi-sedentary, foraging people. The current project incorporates experimental study, contextual examination, and use-wear and residue analyses of three stone mortars from a Natufian burial site at Raqefet Cave, Israel (13,700–11,700 cal. BP). The Results of the analyses indicate that the Natufians exploited at least seven plant taxa, including wheat or barley, oat, legumes and bast fibers (including flax). They packed plant-foods, including malted wheat/barley, in fibermade containers and stored them in boulder mortars. They used bedrock mortars for pounding and cooking plant-foods, including brewing wheat/barley-based beer likely served in ritual feasts ca. 13,000 years ago. These innovations predated the appearance of domesticated cereals by several millennia in the Near East.

Keywords: Alcohol | Flax fibers | Wild cereals | Mortuary ritual | Foragers | The Near East

Neolithikum

Fuller 2006

Dorian Q. Fuller, *Agricultural Origins and Frontiers in South Asia, A Working Synthesis.* Journal of World Prehistory **20** (2006), 1–86.

The accumulation of recent data from archaeobotany, archaeozoology and Neolithic excavations from across South Asia warrants a new overview of early agriculture in the subcontinent. This paper attempts a synthesis of these data while recommending further systematic work and methodological developments. The

evidence for origins and dispersals of important crops and livestock from Southwest Asia into South Asia is reviewed. In addition evidence for indigenous plant and animal domestication in India is presented. Evidence for probable indigenous agricultural developments in Gujarat, the Middle Ganges, Eastern India, and Southern India are reviewed. An attempt is made to highlight regions of important frontiers of interaction between early farmers and hunter-gatherers. The current evidence suggests that the Neolithic trajectories in different parts of South Asia differ from each other. Indigenous centers of plant domestication in India also differ from the often discussed trajectory of Southwest Asia, while suggesting some similarities with agricultural origins in Africa and Eastern North America as well as secondary agricultural developments on the peripheries of Eurasia.

Keywords: Neolithic | Domestication | India | Pakistan | Archaeobotany | Archaeozoology

Ostasien

Fuller 2007

Dorian Q. Fuller, Emma Harvey & Ling Qin, *Presumed domestication? Evidence for wild rice cultivation and domestication in the fifth millennium BC of the Lower Yangtze region.* Antiquity **81** (2007), 316–331.

Prompted by a recent article by Jiang and Liu in Antiquity (80, 2006), Dorian Fuller and his co-authors return to the question of rice cultivation and consider some of the difficulties involved in identifying the transition from wild to domesticated rice. Using data from Eastern China, they propose that, at least for the Lower Yangtze region, the advent of rice domestication around 4000 BC was preceded by a phase of pre-domestication cultivation that began around 5000 BC. This rice, together with other subsistence foods like nuts, acorns and waterchestnuts, was gathered by sedentary hunter-gatherer-foragers. The implications for sedentism and the spread of agriculture as a long term process are discussed.

Keywords: East Asia | China | Yangtze region | sixth millennium BC | fifth millennium BC | rice | foraging | cultivation | origins of agriculture

Ozeanien

Hansford 2018

James Hansford et al., *Early Holocene human presence in Madagascar evidenced by exploitation of avian megafauna.* Science Advances **4** (2018), eaat6925. DOI:10.1126/sciadv.aat6925.

SciAdv04-eaat6925-Supplement.pdf

James Hansford, Patricia C. Wright, Armand Rasoamiaramanana, Ventura R. Pérez, Laurie R. Godfrey, David Errickson, Tim Thompson & Samuel T. Turvey

Previous research suggests that people first arrived on Madagascar by ≈2500 years before present (years B.P.). This hypothesis is consistent with butchery marks on extinct lemur bones from ≈2400 years B.P. and perhaps with archaeological evidence of human presence from ≈4000 years B.P. We report >10,500-year-old human-modified bones for the extinct elephant birds Aepyornis and Mullerornis, which show perimortem chop marks, cut marks, and depression fractures consistent with immobilization and dismemberment. Our evidence for anthropogenic perimortem modification of directly dated bones represents the earliest indication of humans in Madagascar, predating all other archaeological and genetic

evidence by >6000 years and changing our understanding of the history of human colonization of Madagascar. This revision of Madagascar's prehistory suggests prolonged human-faunal coexistence with limited biodiversity loss.

Lawler 2018
: Andrew Lawler, *Scarred bird bones reveal early settlement on Madagascar*. science **361** (2018), 1059.

Find reignites debate about megafauna extinctions.

Tattersall, however, says it's "premature" to make generalizations about human impact. He and Burney, a longtime advocate of the blitzkrieg theory, both note that the Madagascar find could be a sign of a small group of humans who sojourned only briefly on the island, with little effect on the fauna.

Religion

Beyerlein 1975
: Walter Beyerlein (Hrsg.), *Religionsgeschichtliches Textbuch zum Alten Testament*. Grundrisse zum Alten Testament 1 (Göttingen ^{2}1985).

Dieser Band bietet eine übersichtliche Sammlung von Texten, Fotos und Abbildungen aus der Umwelt Israels. Die von Fachleuten eingeleitete, übersetzte und erläuterte, recht umfangreiche Auswahl umfaßt Mythen und Epen, Hymnen und Gebete, Rituale und andere Kulttexte, prophetisches und weisheitliches Gut, Ausschnitte aus Lebenslehren und Totenbüchern, aus Sündenkatalogen und Verträgen.

Jong 2013
: Jonathan Jong, *Explaining Religion (Away?), Theism and the Cognitive Science of Religion*. Sophia **52** (2013), 521–533.

In light of the advancements in cognitive science and the evolutionary psychology of religion in the past two decades, scientists and philosophers have begun to reflect on the theological and atheological implications of naturalistic—and in particular, evolutionary—explanations of religious belief and behaviour. However, philosophical naiveté is often evinced by scientists and scientific naiveté by philosophers. The aim of this article is to draw from these recent contributions, point out some common pitfalls and important insights, and suggest a way forward. This proposal avoids the genetic fallacy as well as misunderstandings of the cognitive mechanisms that give rise to religious belief. In the end, it may well be that the cognitive science of religion is atheologically and theologically ambiguous; traditional philosophers of religion on both sides of the debate still have work to do.

Keywords: Cognitive science of religion | Evolutionary psychology | Naturalism | Divine action

Niehr 1998
: Herbert Niehr, *Religionen in Israels Umwelt, Einführung in die nordwestsemitischen Religionen Syrien-Palästinas*. Echter-Bibel, Ergänzungsband 5 (Würzburg 1998).

Der Zeitraum der in diesem Band behandelten Religionen in Israels Umwelt umfaßt die Epoche von ca. 1500 v. Chr. bis zur Zeitenwende. Im einzelnen geht es um die Darstellung der Religionen, wie sie uns in den nordwestsemitischen Schriftquellen und Kunstwerken der Ugariter, Phönizier, Aramäer, Ammoniter,

Moahiter, Edomiter und Nabatäer vorliegen. Inhaltlich geht es darum, die Götterwelt, den Kult, die Orakelpraxis, den Bereich des Todes und der Unterwelt sowie die Kosmologie und die Mythen dieser Religionen zu erfassen und vorzustellen.

Die Kenntnis dieser Religionen ist unerläßlich für das Verständnis der Religion des alten Israel, da sich die Religion Israels in ihren Grundzügen von den Religionen seiner Umwelt nicht unterscheidet.