

## References

### Aktuell

GOLDFARB 2016

Ben Goldfarb, *No proof that predator culls save livestock, study claims.* [science](#) **353** (2016), 1080–1081.

MASON 2016

Betsy Mason, *The atmosphere's pacemaker skips a beat.* [science](#) **353** (2016), 1079–1080.

Hiccup bodes wet winter weather for Europe.

It had not skipped a beat since scientists first reported its existence in 1960. Until now. “This is really, really unexpected,” says Steven Pawson, an earth scientist at NASA’s Goddard Space Flight Center in Greenbelt, Maryland, and a co-author of a study published last week in *Geophysical Research Letters* that also describes the disruption. A capricious QBO would deprive scientists of a seasonal forecasting tool.

OLSON 2016

Stephanie L. Olson, Christopher T. Reinhard & Timothy W. Lyons, *Limited role for methane in the mid-Proterozoic greenhouse.* [PNAS](#) **113** (2016), 11447–11452.

Pervasive anoxia in the subsurface ocean during the Proterozoic may have allowed large fluxes of biogenic CH<sub>4</sub> to the atmosphere, enhancing the climatic significance of CH<sub>4</sub> early in Earth’s history. Indeed, the assumption of elevated pCH<sub>4</sub> during the Proterozoic underlies most models for both anomalous climatic stasis during the mid-Proterozoic and extreme climate perturbation during the Neoproterozoic; however, the geologic record cannot directly constrain atmospheric CH<sub>4</sub> levels and attendant radiative forcing. Here, we revisit the role of CH<sub>4</sub> in Earth’s climate system during Proterozoic time. We use an Earth system model to quantify CH<sub>4</sub> fluxes from the marine biosphere and to examine the capacity of biogenic CH<sub>4</sub> to compensate for the faint young Sun during the “boring billion” years before the emergence of metazoan life. Our calculations demonstrate that anaerobic oxidation of CH<sub>4</sub> coupled to SO<sub>4</sub><sup>2-</sup> reduction is a highly effective obstacle to CH<sub>4</sub> accumulation in the atmosphere, possibly limiting atmospheric pCH<sub>4</sub> to less than 10 ppm by volume for the second half of Earth history regardless of atmospheric pO<sub>2</sub>. If recent pO<sub>2</sub> constraints from Cr isotopes are correct, we predict that reduced UV shielding by O<sub>3</sub> should further limit pCH<sub>4</sub> to very low levels similar to those seen today. Thus, our model results likely limit the potential climate warming by CH<sub>4</sub> for the majority of Earth history—possibly reviving the faint young Sun paradox during Proterozoic time and challenging existing models for the initiation of low-latitude glaciation that depend on the oxidative collapse of a steady-state CH<sub>4</sub> greenhouse.

**Keywords:** faint young Sun | boring billion | Snowball Earth | methane | oxygenation

**Significance:** Proterozoic climate dynamics, including both remarkable climate stability during the mid-Proterozoic and extreme lowlatitude glaciation in the

Neoproterozoic, must be understood in the framework of evolving oxidant reservoirs throughout the Precambrian. We present Earth system model simulations showing that recent constraints on atmospheric oxygen and oceanic sulfate during Proterozoic time have profound implications for marine methane cycling and the accumulation of methane in the atmosphere. Our model results challenge the paradigm of persistently elevated methane during the Precambrian, thus extending the relevance of the faint young Sun paradox throughout the Proterozoic. In light of the possibility of low methane during the mid-Proterozoic, we also suggest a conceptual model for the relationship between oxygenation, methane, and Neoproterozoic Snowball Earth events.

RIPPEN 2016

Marie Rippen, *Taking ownership of luck*. [science](#) **353** (2016), 1330.

When people ask me how I got my job as the facility director for a biotechnology incubator right after finishing my Ph.D., my answer used to be, “I was lucky.” I felt lucky to land an intellectually engaging job that gives me the freedom to shape the future of a company in the city where I want to live. Actually, I felt lucky to get a job at all. But recently, I’ve realized that luck doesn’t deserve all the credit—I do. I’m not saying that I made all the right choices, and serendipity played its role, but landing my job was first and foremost a result of my own hard work and determination. I’m now learning to take ownership of my success, which will help me continue to progress in my career.

## Altpaläolithikum

HOSFIELD 2016

Rob Hosfield, *Walking in a Winter Wonderland? Strategies for Early and Middle Pleistocene Survival in Midlatitude Europe*. [Current Anthropology](#) **57** (2016), 653–682.

[CurrAnth57-653-Supplement.pdf](#)

Any occupation of northern Europe by Lower Paleolithic hominins, even those occurring during full interglacials, must have addressed the challenges of marked seasonality and cold winters. These would have included the problems of windchill and frostbite; duration, distribution, and depth of snow cover; reduced daylight hours; and distribution and availability of animal and plant foods. Solutions can essentially be characterized as a “stick or twist” choice, that is, year-round presence on a local scale versus extensive annual mobility. However, these options—and the interim strategies that lie between them—present various problems, including maintaining core body temperature, meeting the energetic demands of mobility, coping with reduced resource availability and increasing patchiness, and meeting nutritional requirements. The feasibility of different winter survival strategies are explored with reference to Lower Paleolithic paleoenvironmental reconstructions and on-site behavioral evidence. Emphasis is placed on possible strategies for (i) avoiding the excessive lean meat protein problem of “rabbit starvation” (e.g., through exploitation of “residential” species with significant winter body fat and/or by targeting specific body parts, following modern ethnographic examples, supplemented by the exploitation of winter plants) and (ii) maintaining body temperatures (e.g., through managed pyrotechnology and/or other forms of cultural insulation). The paper concludes with a suggested winter strategy.

## Archäologie

GOWLAND 2006

REBECCA GOWLAND & CHRISTOPHER KNÜSEL (Hrsg.), *Social Archaeology of Funerary Remains*. (Oxford 2006).

## Bibel

VAN DER VEEN 2012

Peter van der Veen, *Berlin Statue Pedestal Reliefs 21687 and 21688, Ongoing Research*. [Journal of Ancient Egyptian Interconnections 4 \(2012\), iv, 41–42](#).

VAN DER VEEN 2014

Peter G. van der Veen & Wolfgang Zwickel, *Die neue Israel-Inschrift und ihre historischen Implikationen*. In: STEFAN JAKOB WIMMER & GEORG GAFUS (Hrsg.), *„Vom Leben umfassen“: Ägypten, das Alte Testament und das Gespräch der Religionen, Gedenkschrift für Manfred Görg*. *Ägypten und Altes Testament 80 (Münster 2014), 425–433*.

Manfred Görg hat in einem seiner Aufsätze auf einen beschrifteten Sockel im Ägyptischen Museum in Berlin aufmerksam gemacht, der seiner Meinung nach den ältesten Beleg für den Namen Israel darstellen dürfte (Görg 2001; 2011). In jüngerer Vergangenheit wurde diese These wieder aufgegriffen. Der Beitrag in dieser Gedenkschrift für M. Görg, der in einzigartiger Art und Weise ägyptologische und alttestamentliche Forschung vereint hat, soll über den aktuellen Forschungsstand zu diesem wichtigen Fundstück informieren und will darüber hinaus auch Überlegungen zur historischen Relevanz und Einordnung der Inschrift bieten.

## Kultur

HAARER 1934

Johanna Haarer, *Die deutsche Mutter und ihr erstes Kind*. (München 1943).

Der „moderne“ Zeitgeist der zwanziger und dreißiger Jahre des zwanzigsten Jahrhunderts – nicht nur in Deutschland sondern ganz Europa.

MILLAIRE 2016

Jean-François Millaire, Gabriel Prieto, Flannery Surette, Elsa M. Redmond & Charles S. Spencer, *Statecraft and expansionary dynamics, A Virú outpost at Huaca Prieta, Chicama Valley, Peru*. [PNAS 113 \(2016\), E6016–E6025](#).

Interpolity interaction and regional control were central features of all early state societies, taking the form of trade—embedded in political processes to varying degrees—or interregional conquest strategies meant to expand the polity’s control or influence over neighboring territories. Cross-cultural analyses of early statecraft suggest that territorial expansion was an integral part of the process of primary state formation, closely associated with the delegation of authority to

subordinate administrators and the construction of core outposts of the state in foreign territories. We report here on a potential case of a core outpost, associated with the early Virú state, at the site of Huaca Prieta in the Chicama Valley, located 75 km north of the Virú state heartland on the north coast of Peru. This site is discussed in the context of other possible Virú outposts in the Moche Valley, Pampa La Cruz, and Huaca Las Estrellas, and as part of a broader reflection on expansionary dynamics and statecraft.

**Keywords:** archaic states | territorial expansion | core outposts

**Significance:** Cross-cultural analyses of early statecraft suggest that territorial expansion was an integral part of the process of primary state formation, closely associated with the delegation of authority to subordinate administrators and the construction of core outposts of the state in foreign territories. Understood as instruments of territorial expansion that were closely tied to historical processes, such outposts offer important viewpoints on the evolutionary trajectories of specific early states and also on the nature and extent of the foreign policy of archaic states in general.

## NOVAK 2006

Shannon A. Novak, *Beneath the Façade, A Skeletal Model of Domestic Violence*. In: REBECCA GOWLAND & CHRISTOPHER KNÜSEL (Hrsg.), *Social Archaeology of Funerary Remains*. (Oxford 2006), 238–252.

The BRI model was developed in a Western industrial context and has yet to be tested in other ethnographic settings. In particular, field studies of wound patterning in small-scale societies would probably lead to refinements or revisions of the model. At the same time, we must not idealise so-called traditional societies as a privileged site of inquiry into human behaviour. All contemporary humans, including hunter-gatherers, have been affected directly or indirectly by Western commodities, politics, and pathogens. As Sugiyama (2004, 385) notes, “no single extant or prehistoric group could provide a comprehensive snapshot of the pathogenic, foraging, social, and demographic conditions that form the parameters of our evolutionary history.” Yet the corollary is that no human group, including a Western industrial society, should be considered irrelevant to an evolutionary analysis. The approach taken here aims to develop and refine evolutionary principles of human behavior by studying such behavior in as many different contexts as possible.

In extending the present research to other societies, it must be recognised that domestic violence is a specific form of conflict, quite distinct from what is usually called “political” conflict, in both its causes and its consequences. Domestic assault tends to involve a continuing, intimate, and socially sanctioned relationship between perpetrator and victim, who are usually of opposite sex. For all these reasons, it stands apart from the various forms of public violence, including war, spectacle, and “street crime.” Acknowledging the distinct nature of domestic violence is the first step to understanding its historical effects on women’s health, fitness, and mortality.

## SCHULTING 2006

Rick Schulting, *Skeletal Evidence and Contexts of Violence in the European Mesolithic and Neolithic*. In: REBECCA GOWLAND & CHRISTOPHER KNÜSEL (Hrsg.), *Social Archaeology of Funerary Remains*. (Oxford 2006), 224–237.

The above discussion has touched upon the various lines of skeletal evidence for interpersonal violence in the Mesolithic and Neolithic of Europe. Interpretation

is often far from straightforward, but then violence itself is equally not a simple phenomenon. Nevertheless, it has been possible in this brief review to suggest various contexts for violence, including encounters between mainly adult males using projectile weaponry, both at some distance and possibly in ambush; some form of non-lethal conflict, whether domestic or ritualised; large-scale raiding or warfare; capture of women; violent cannibalism; head-taking; and sacrifice. A discussion of the actual prevalence of violent trauma at different times and in different places across Europe has been beyond the scope of this paper, but is clearly an area that requires attention. Even then, the skeletal evidence, of course, only provides one aspect of the picture, in some ways a very limited one, and it is essential to see how the actual prevalence and contexts for violent injury and death correlate with other lines of evidence. Only then will it be possible to explore the causes and consequences of violence in the context of Mesolithic and Neolithic society and the great changes that were happening at this juncture in European prehistory.

#### WATSON 2016

James T. Watson & Danielle O. Phelps, *Violence and Perimortem Signaling among Early Irrigation Communities in the Sonoran Desert*. *Current Anthropology* **57** (2016), 586–609.

Violence is common among small-scale societies and often stems from a combination of exogenous and endogenous factors. We suggest that socialization for violence and revenge as a motivation can encourage costly signaling by warriors and contribute to the creation of atypical burials in archaeological contexts. We characterize mortuary patterns among early irrigation communities in the Sonoran Desert of the southwest United States/northwest Mexico (Early Agricultural period: 2100 BC–AD 50) to define normative mortuary practices and identify atypical burials. One of the principle roles the performance of mortuary rituals fulfills is to publicly integrate a shared identity or reinforce social differences within a community. This postmortem negotiation of social identities was likely an important component to ease social tensions in early farming communities. However, atypical burials from these sites appear to represent acts of violence upon the corpse at, or after, the death of the individual that fall outside of the normative conformity to prescribed mortuary ritual. We propose that these cases represent perimortem signaling, a form of costly signaling conditioned as basal violent reactions, possibly stemming from socialization for violence.

## Kupfer

#### KNABB 2016

Kyle A. Knabb, Yigal Erel, Ofir Tirosh, Tammy Rittenour, Sofia Laparidou, Mohammad Najjar & Thomas E. Levy, *Environmental impacts of ancient copper mining and metallurgy, Multi-proxy investigation of human-landscape dynamics in the Faynan valley, southern Jordan*. *Journal of Archaeological Science* **74** (2016), 85–101.

The environmental impact of mining and metallurgy is an issue that has affected societies in the ancient Near East over the past 8000 years. We present the results of a multidisciplinary project using agricultural sediments from ancient terraces as a cultural archive of environmental pollution and land use in the copper ore-rich Faynan valley of southern Jordan. Due to the simultaneous production of agricultural goods and copper metallurgy throughout the last 6000 years in the valley,

environmental pollution and its consequences for human health have been considered as a factor in settlement abatement. Sediments from two farming terrace systems adjacent to the major mining and smelting locales were analyzed. The sediment analyses included metal concentrations, lead-isotopes and phytolith analysis, and OSL dating. Although measurable concentrations of lead and other heavy metals persist in ancient metallurgical waste piles, our investigations found minimal evidence for contamination in the adjacent terrace systems. Based on these results, we argue that the occurrence of environmental pollution in the Faynan valley is highly variable, and that the distribution of heavy metals resulted from a combination of natural and cultural factors, including persistent landscape features that helped contain the most polluted metallurgical deposits. These findings are significant for understanding the processes of landscape change and human impacts on desert environments, including the ways in which past human actions have negatively affected the environment, as well as preserved and protected the environment from further degradation.

**Keywords:** Environmental history | Paleo-pollution | Metallurgy | Geochemistry | Phytoliths | Luminescence dating

## NESSSEL 2015

B. Nessel, G. Brügmann & E. Pernicka, *Tin Isotopes and the Sources of Tin in the Early Bronze Age Únětice Culture*. In: JOSEP MARÍA MATA-PERELLÓ, MARK A. HUNT ORTIZ & ENRIQUE ORCHE GARCÍA (Hrsg.), *Patrimonio Geológico y Minero: De la Investigación a la Difusión, Actas del XV Congreso Internacional Sobre Patrimonio Geológico y Minero, 25–28 de septiembre de 2014. (Logrosán 2015)*, 1–20.

Bronze, a Cu-Sn alloy, occurred during the early third millennium B.C., and became an eponym for an epoch lasting more than two thousand years. While great progress has been made concerning the provenance of copper, the origin of tin remains as one of the knottiest problems in archaeology. Apart from the difficulties to find tin deposits and production sites that were exploited in prehistoric times by applying traditional textual, geological and archaeological evidence, even geochemical approaches proved to be problematic, if one attempts to associate potential ore sources with archaeological artefacts. Neither trace element concentrations and abundance patterns nor lead isotopic compositions offer defined fingerprints that can trace tin back to its source, especially when alloyed with copper. The isotopic composition of tin itself, in its ores and bronzes, may be a promising tool for answering the open questions.

This paper discusses methodical issues in acquiring tin isotope data from metal objects. It also presents the first tin isotopic research on Early Bronze Age metal artefacts from the region of Halle, Germany, which belong to the central European Unetice Culture. The results indicate that bronzes from different hoards and with variable tin contents (1 to 12 wt. %) display a narrow range in the tin isotopic composition  $d^{124}\text{Sn}/^{120}\text{Sn} = 0.24 \pm 0.04 \text{ ‰}$ . The isotope ratios agree well with published data of cassiterites from the Erzgebirge. It seems thus likely that the Unetice Culture used the local tin ores, even though there is no archaeological evidence of prehistoric tin mining in this region.

**Keywords:** Unetice Culture | tin-Sn-isotope ratios | Central Germany

## Mittelpaläolithikum

STOESSEL 2016

Alexander Stoessel, Romain David, Philipp Gunz, Tobias Schmidt, Fred Spoor & Jean-Jacques Hublin, *Morphology and function of Neandertal and modern human ear ossicles*. *PNAS* **113** (2016), 11489–11494.

pnas113-11489-Supplement.docx

The diminutive middle ear ossicles (malleus, incus, stapes) housed in the tympanic cavity of the temporal bone play an important role in audition. The few known ossicles of Neandertals are distinctly different from those of anatomically modern humans (AMHs), despite the close relationship between both human species. Although not mutually exclusive, these differences may affect hearing capacity or could reflect covariation with the surrounding temporal bone. Until now, detailed comparisons were hampered by the small sample of Neandertal ossicles and the unavailability of methods combining analyses of ossicles with surrounding structures. Here, we present an analysis of the largest sample of Neandertal ossicles to date, including many previously unknown specimens, covering a wide geographic and temporal range. Microcomputed tomography scans and 3D geometric morphometrics were used to quantify shape and functional properties of the ossicles and the tympanic cavity and make comparisons with recent and extinct AMHs as well as African apes. We find striking morphological differences between ossicles of AMHs and Neandertals. Ossicles of both Neandertals and AMHs appear derived compared with the inferred ancestral morphology, albeit in different ways. Brain size increase evolved separately in AMHs and Neandertals, leading to differences in the tympanic cavity and, consequently, the shape and spatial configuration of the ossicles. Despite these different evolutionary trajectories, functional properties of the middle ear of AMHs and Neandertals are largely similar. The relevance of these functionally equivalent solutions is likely to conserve a similar auditory sensitivity level inherited from their last common ancestor.

Keywords: middle ear | homo | 3D shape | covariation

Significance: Middle ear ossicles are critical for audition and rarely preserved in fossils. Based on microcomputed tomography images, our comparative 3D shape analysis of Neandertal ossicles shows striking shape differences between Neandertals and anatomically modern humans (AMHs). However, these morphological differences do not affect the functional properties of the ossicles, potentially indicating consistent aspects of vocal communication in Neandertals and AMHs. Instead, a strong relationship between ossicle morphology and tympanic cavity architecture is found.

## Neolithikum

BECKETT 2006

Jessica Beckett & John Robb, *Neolithic burial taphonomy, ritual, and interpretation in Britain and Ireland, A review*. In: REBECCA GOWLAND & CHRISTOPHER KNÜSEL (Hrsg.), *Social Archaeology of Funerary Remains*. (Oxford 2006), 57–80.

After more than a century of study, some of the basic outlines of Neolithic burial are clear. The commonest rite, attested at almost all burial sites, particularly in the later Neolithic, is to repeatedly bury complete bodies in collective tombs, with each one disturbing earlier depositions. Cremation is found at a surprising number

of sites and seems not to constitute an opposed rite to inhumation so much as a particular focus or moment in a complex burial programme. Secondary burial, exarnation, and manipulation of bones can be clearly demonstrated much less frequently, though they did occur sometimes. There was also much variety, even within very small regions; demonstrating or disproving a rite at one tomb does not mandate it or rule it out at other sites, even just a few kilometres away.

Secondly, as both the Stonehenge and Avebury landscapes and the Irish example above show, different sites may have formed complementary parts of a dispersed burial programme. Thus, to understand Neolithic burial, we must move from focusing on sites to focusing on broader landscapes.

## Ozeanien

BIRD 2016

Michael I. Bird, Damien O’Grady & Sean Ulm, *Humans, water, and the colonization of Australia*. [PNAS 113 \(2016\), 11477–11482](#).

[pnas113-11477-Supplement.xlsx](#)

The Pleistocene global dispersal of modern humans required the transit of arid and semiarid regions where the distribution of potable water provided a primary constraint on dispersal pathways. Here, we provide a spatially explicit continental-scale assessment of the opportunities for Pleistocene human occupation of Australia, the driest inhabited continent on Earth. We establish the location and connectedness of persistent water in the landscape using the Australian Water Observations from Space dataset combined with the distribution of small permanent water bodies (springs, gnammas, native wells, waterholes, and rockholes). Results demonstrate a high degree of directed landscape connectivity during wet periods and a high density of permanent water points widely but unevenly distributed across the continental interior. A connected network representing the least-cost distance between water bodies and graded according to terrain cost shows that 84% of archaeological sites >30,000 y old are within 20 km of modern permanent water. We further show that multiple, well-watered routes into the semiarid and arid continental interior were available throughout the period of early human occupation. Depletion of high-ranked resources over time in these paleohydrological corridors potentially drove a wave of dispersal farther along well-watered routes to patches with higher foraging returns.

**Keywords:** Sahul | Pleistocene colonization | radiocarbon | human dispersal | paleohydrological corridor

**Significance:** Australia is the driest inhabited continent on earth, but humans dispersed rapidly through much of the arid continental interior after their arrival more than 47,000 y ago. The distribution and connectedness of water across the continent, and particularly in its arid core, played a pivotal role in facilitating and focusing early human dispersal throughout the continent. We analyze the distribution and connectedness of modern permanent water across Australia. The modelled least-cost pathways between permanent water sources indicate that the observed rapid occupation of the continental interior was possible along multiple, well-watered routes and likely was driven by the depletion of high-ranked resources in each newly occupied area over time.