Liste erstellt am 2015-07-30

References

Afrika

Classen 2010

Erich Claßen, Karin Kindermann, Andreas Pastoors & Heiko Riemer, *Djara, Höhlenbilder in der Westwüste Ägyptens.* In: Karin Kindermann (Hrsg.), *Djara, Zur mittelholozänen Besiedlungsgeschichte zwischen Niltal und Oasen (Abu-Muharik-Plateau, Ägypten).* Africa Praehistorica 23 (Köln 2010), 766–812.

Die 133 Felsbilder verteilen sich auf neun Bildfelder mit einem eindeutigen Schwerpunkt im "Saal der Gazellen". Zum Großteil liegen sie in einem Bereich, der vom Tageslicht noch erreicht wird. Die Erkenntnisse aus den Untersuchungen des archäologischen Kontexts innerhalb der Höhle lassen eine Mehrfachnutzung vom späten Epi paläolithikum (7000 calBC) bis zum Ende der Besiedlung der Region während des Final Djara B (4900 calBC) erkennen.

Riemer 2014

Heiko Riemer & Karin Kindermann, *What's that tool for? An unusual flint knife from the Egyptian Western Desert.* In: Mariusz A. Jucha, Joanna Debowska-Ludwin & Piotr Kolodziejczyk (Hrsg.), *Aegyptus est imago caeli, Studies presented to Krzysztof M. Ciałowicz on his 60th birthday.* (Krakow 2014), 217–222.

A peculiar silex knife was found during the early 1980s on the Abu Sa'id Plateau in the Western Desert of Egypt. The knife is bifacially retouched, such as knives from prehistoric contexts of the northern part of the Egyptian Western Desert, dating there between c. 5500 and 4500 cal BC. Yet, among these knives, the Abu Sa'id knife stands out due to its remarkable length of 38 cm. Knives with such an extraordinary length, however, are known from Early Dynastic contexts in the Nile Valley. Therefore, the paper discusses the possible cultural and chronological position of this knife from the Western Desert.

Aktuell

Benson 2015

Erik Benson, Abdulmelik Mohammed, Johan Gardell, Sergej Masich, Eugen Czeizler, Pekka Orponen & Björn Högberg, *DNA rendering of polyhedral meshes at the nanoscale.* nature **523** (2015), 441–444.

n523-0441-Supplement1.pdf

It was suggested more than thirty years ago that Watson–Crick base pairing might be used for the rational design of nanometrescale structures from nucleic acids. Since then, and especially since the introduction of the origami technique, DNA nanotechnology has enabled increasingly more complex structures. But although general approaches for creating DNA origami polygonal meshes and design software are available14,16,17,19–21, there are still important constraints arising from DNA geometry and sense/ antisense pairing, necessitating some manual adjustment during the design process. Here we present a general method of folding

arbitrary polygonal digital meshes in DNA that readily produces structures that would be very difficult to realize using previous approaches. The design process is highly automated, using a routeing algorithm based on graph theory and a relaxation simulation that traces scaffold strands through the target structures. Moreover, unlike conventional origami designs built from closepacked helices, our structures have a more open conformation with one helix per edge and are therefore stable under the ionic conditions usually used in biological assays.

Bleicher 2015

Ariel Bleicher, *Das Orakel*. Spektrum der Wissenschaft **2015**, viii, 56–61.

Der Mathematiker Ken Ono hat ein lange offenes Rätsel gelöst – indem er Erkenntnisse nutzte, die er in den unveröffentlichten Arbeiten des indischen Ausnahmetalents Srinivasa Ramanujan entdeckt hatte.

Görke 2015

Susanne Görke, *Das Weltbild der Hethiter*. Spektrum der Wissenschaft **2015**, viii, 62–66.

In alten Kulturen galt das Jenseits mal als düsterer Ort des Schreckens, mal als Spiegelbild der Erde. In den kosmologischen Vorstellungen der Hethiter existierten sogar beide Ansichten nebeneinander – als Ergebnis unterschiedlicher religiöser Traditionen.

Normile 2015

Dennis Normile, *Plan to drop goals for women roils Japanese science*. science **349** (2015), 127–128.

Change stirs debate about how to remedy underrepresentation of women.

Harayama also suspects many women avoid leadership positions because they don't find the prospect of working within Japan's male-dominated, opaque decisionmaking hierarchies very attractive. "We need changes in the establishment," she says.

Pöppe 2015

Christoph Pöppe, *Das Wahnsinnsamt, Sandhäufchen und apollonische Dreiecke, Selbstorganisierte Kritizität*. Spektrum der Wissenschaft **2015**, viii, 67–71.

Was passiert, wenn man Sandkörner auf eine ebene Fläche rieseln lässt? Aus einem idealisierten, sehr einfachen Bildungsgesetz entsteht völlig überraschend eine unendlich vielgestaltige Struktur.

Prescott 2015

Tony Prescott, *Roboter mit Ego, Künstliches Bewußtsein*. Spektrum der Wissenschaft **2015**, viii, 80–85.

Die Ich-Vorstellung eines Menschen, der sich seiner selbst bewusst ist, setzt sich aus einer Reihe von Einzelaspekten zusammen. Wissenschaftler haben damit begonnen, diese Komponenten Stück für Stück in einen Roboter einzubauen. Am Ende hoffen sie so ein künstliches Bewusstsein zu schaffen.

Schiermeier 2015

Quirin Schiermeier, *Quest for climate-proof farms*. nature **523** (2015), 396–397.

Climate change is a major threat to food production, so researchers are working with farmers to make agriculture more resilient.

Hearing such negative projections, some farmers shook their heads in disbelief. "I would rather trust my own experience than any such forecast," said Untersmayr. His reaction reveals the communication gap that has long separated scientists from farmers in planning for climate change. "There is a deep divide between the science and its supposed end-users," says Nora Mitterböck, who oversees climate-change adaptation policies at the Federal Austrian Ministry for Agriculture and the Environment in Vienna. "There is no lack of climate-impact research, but very little of it arrives on the farm. It's a sad situation that must absolutely change."

Schlichting 2015

H. Joachim Schlichting, *Schönheit im Auge des Betrachters*. Spektrum der Wissenschaft **2015**, viii, 48–49.

Manche farbenprächtige Erscheinung lässt sich nur beschreiben, jedoch nicht direkt fotografieren – denn sie entsteht erst in unserem Sehorgan selbst.

Shafer-Elliott 2015

Cynthia Shafer-Elliott, *Biblical Bread: Baking Like the Ancient Israelites, Experimental archaeology at Tell Halif, Israel*. Bible History Daily **2015**, July 29. <http://www.biblicalarchaeology.org/daily/ancient-cultures/daily-life-and-practice/biblical-bread-baking-like-the-ancient-israe>.

Amerika

Rasmussen 2015

Morten Rasmussen et al., *The ancestry and affiliations of Kennewick Man*. nature **523** (2015), 455–458.

n523-0455-Supplement1.pdf

Morten Rasmussen, Martin Sikora, Anders Albrechtsen, Thorfinn Sand Korneliussen, J. Víctor Moreno-Mayar, G. David Poznik, Christoph P. E. Zollikofer, Marcia S. Ponce de León, Morten E. Allentoft, Ida Moltke, Hákon Jónsson, Cristina Valdiosera, Ripan S. Malhi, Ludovic Orlando, Carlos D. Bustamante, Thomas W. Stafford Jr, David J. Meltzer, Rasmus Nielsen & Eske Willerslev

Kennewick Man, referred to as the AncientOne by Native Americans, is a male human skeleton discovered in Washington state (USA) in 1996 and initially radiocarbon dated to 8,340–9,200 calibrated years before present (BP). His population affinities have been the subject of scientific debate and legal controversy. Based on an initial study of cranial morphology it was asserted that Kennewick Man was neither Native American nor closely related to the claimant Plateau tribes of the Pacific Northwest, who claimed ancestral relationship and requested repatriation under the Native American Graves Protection and Repatriation Act (NAGPRA). The morphological analysis was important to judicial decisions that Kennewick Man was not Native American and that therefore NAGPRA did not apply. Instead of repatriation, additional studies of the remains were permitted. Subsequent craniometric analysis affirmed Kennewick Man to be more closely related to circumpacific groups such as the Ainu and Polynesians than he is to modern Native Americans. In order to resolve Kennewick Man's ancestry and affiliations, we have sequenced his genome to 13 coverage and compared it to worldwide genomic data including for the Ainu and Polynesians. We find that

Kennewick Man is closer to modern Native Americans than to any other population worldwide. Among the Native American groups for whom genome-wide data are available for comparison, several seem to be descended from a population closely related to that of Kennewick Man, including the Confederated Tribes of the Colville Reservation (Colville), one of the five tribes claiming Kennewick Man. We revisit the cranial analyses and find that, as opposed to genome-wide comparisons, it is not possible on that basis to affiliate Kennewick Man to specific contemporary groups. We therefore conclude based on genetic comparisons that Kennewick Man shows continuity with Native North Americans over at least the last eight millennia.

Anthropologie

Boone 2002

James L. Boone, *Subsistence strategies and early human population history, An evolutionary ecological perspective.* World Archaeology **34** (2002), 6–25.

One of the keystones of the evolutionary ecological approach is the concept of energy budget, in which time and energy allocation is conceptually divided into somatic effort (growth, development and maintenance, and includes subsistence activities) and reproductive effort (which is further divided into mating effort and parental effort). Time and energy allocated to one component must be traded off against allocation to another. Using this energy budget approach in conjunction with some of the general implications of foraging theory, this article will explore the relationship between population dynamics and subsistence intensification. My discussion will revolve around two basic propositions regarding long-term human population history:
1) the near-zero growth rates that have prevailed through much of prehistory are likely due to long-term averaging across periods of relatively rapid local population growth interrupted by infrequent crashes caused by density-dependent and density-independent factors; and
2) broad changes in population growth rates across subsistence modes in prehistory are probably best explained in terms of changes in mortality due to the dampening or buffering of crashes rather than significant increases in fertility.

Keywords: Optimal foraging theory | human population ecology | carrying capacity | subsistence intensification | population bottlenecks.

Gurven 2007

Michael Gurven & Hillard Kaplan, *Longevity Among Hunter-Gatherers, A Cross-Cultural Examination.* Population and Development Review **33** (2007), 321–365.

The purpose of this article is to assess the evolved human mortality profile and particularly the pattern of senescent mortality change with age. We address five questions:
1) Is there a characteristic shape to the human mortality profile, as it decreases first during childhood and then increases with aging?
2) How robust is the occurrence of a post-reproductive life span, and how likely is it that older adults were alive and available in human populations?
3) Is there a characteristic modal age at death for adults, and what can this mode tell us about aging and the evolution of the human life span?
4) How variable is this mortality profile among populations, and what factors shape any variation?

5) How do the mortality patterns of modern hunter-gatherers compare with estimates of the mortality profiles of both chimpanzees, our closest living primate relative, and prehistoric populations derived from funerary samples, and what implications can be derived from those comparisons?

Our conclusion is that there is a characteristic life span for our species, in which mortality decreases sharply from infancy through childhood, followed by a period in which mortality rates remain essentially constant to about age 40 years, after which mortality rises steadily in Gompertz fashion. The modal age of adult death is about seven decades, before which time humans remain vigorous producers, and after which senescence rapidly occurs and people die. We hypothesize that human bodies are designed to function well for about seven decades in the environment in which our species evolved. Mortality rates differ among populations and among periods, especially in risks of violent death. However, those differences are small in a comparative cross-species perspective, and the similarity in mortality profiles of traditional peoples living in varying environments is impressive.

Joshi 2015

Peter K. Joshi et al., *Directional dominance on stature and cognition in diverse human populations*. nature **523** (2015), 459–462.

n523-0459-Supplement1.xlsx, n523-0459-Supplement2.pdf

Homozygosity has long been associated with rare, often devastating, Mendelian disorders1, and Darwin was one of the first to recognize that inbreeding reduces evolutionary fitness. However, the effect of the more distant parental relatedness that is common in modern human populations is less well understood. Genomic data nowallow us to investigate the effects of homozygosity on traits of public health importance by observing contiguous homozygous segments (runs of homozygosity), which are inferred to be homozygous along their complete length. Given the low levels of genome-wide homozygosity prevalent in most human populations, information is required on very large numbers of people to provide sufficient power. Here we use runs of homozygosity to study 16 healthrelated quantitative traits in 354,224 individuals from 102 cohorts, and find statistically significant associations between summed runs of homozygosity and four complex traits: height, forced expiratory lung volume in one second, general cognitive ability and educational attainment (P,13102300, 2.131026, 2.5310210 and 1.8310210, respectively). In each case, increased homozygosity was associated with decreased trait value, equivalent to the offspring of first cousins being 1.2 cm shorter and having 10 months' less education. Similar effect sizes were found across four continental groups and populations with different degrees of genome-wide homozygosity, providing evidence that homozygosity, rather than confounding, directly contributes to phenotypic variance. Contrary to earlier reports in substantially smaller samples5,6, noevidencewas seen of an influence of genome-wide homozygosity on blood pressure and low density lipoprotein cholesterol, or ten other cardiometabolic traits. Since directional dominance is predicted for traits under directional evolutionary selection7, this study provides evidence that increased stature and cognitive function have been positively selected in human evolution, whereas many important risk factors for late-onset complex diseases may not have been.

McBrearty 2000

Sally McBrearty & Alison S. Brooks, *The revolution that wasn't, A new interpretation of the origin of modern human behavior*. Journal of Human Evolution **39** (2000), 453–563.

Proponents of the model known as the "human revolution" claim that modern human behaviors arose suddenly, and nearly simultaneously, throughout the Old

World ca. 40–50 ka. This fundamental behavioral shift is purported to signal a cognitive advance, a possible reorganization of the brain, and the origin of language. Because the earliest modern human fossils, Homo sapiens sensu stricto, are found in Africa and the adjacent region of the Levant at >100 ka, the "human revolution" model creates a time lag between the appearance of anatomical modernity and perceived behavioral modernity, and creates the impression that the earliest modern Africans were behaviorally primitive. This view of events stems from a profound Eurocentric bias and a failure to appreciate the depth and breadth of the African archaeological record. In fact, many of the components of the "human revolution" claimed to appear at 40–50 ka are found in the African Middle Stone Age tens of thousands of years earlier. These features include blade and microlithic technology, bone tools, increased geographic range, specialized hunting, the use of aquatic resources, long distance trade, systematic processing and use of pigment, and art and decoration. These items do not occur suddenly together as predicted by the "human revolution" model, but at sites that are widely separated in space and time. This suggests a gradual assembling of the package of modern human behaviors in Africa, and its later export to other regions of the Old World. The African Middle and early Late Pleistocene hominid fossil record is fairly continuous and in it can be recognized a number of probably distinct species that provide plausible ancestors for H. sapiens. The appearance of Middle Stone Age technology and the first signs of modern behavior coincide with the appearance of fossils that have been attributed to H. helmei, suggesting the behavior of H. helmei is distinct from that of earlier hominid species and quite similar to that of modern people. If on anatomical and behavioral grounds H. helmei is sunk into H. sapiens, the origin of our species is linked with the appearance of Middle Stone Age technology at 250–300 ka.

Keywords: Origin of Homo sapiens | modern behavior | Middle Stone Age | African archaeology | Middle Pleistocene.

Potts 2004

Richard Potts, *Paleoenvironmental Basis of Cognitive Evolution in Great Apes*. American Journal of Primatology **62** (2004), 209–228.

A bias favoring tree-dominated habitats and ripe-fruit frugivory has persisted in great ape evolution since the early Miocene. This bias is indicated by fossil ape paleoenvironments, molar morphology, dental microwear, the geographic pattern of extinctions, and extant apes' reliance on wooded settings. The ephemeral aspect of high-quality fruit has placed a premium on cognitive and social means of finding and defending food sources, and appears related to great apes' affinity since the Miocene for wooded, fruit-rich environments. These habitats have, however, undergone a severe withdrawal toward the low latitudes of Africa and Southeast Asia since the late Miocene, corresponding to a decline in the diversity of great apes beginning 9.5 million years ago. Plio-Pleistocene records imply that wooded settings of Africa and SE Asia were prone to substantial fragmentation and coalescence. Once apes were confined to equatorial settings, therefore, habitat instability heightened the spatial/temporal uncertainty of ripe-fruit sources. Prolonged learning, the assignment of attributes to distant places, mental representation, and reliance on fallback foods were all favored in this dynamic environmental context. These abilities helped sustain forest frugivory in most lineages. Fluid social grouping afforded the animals opportunities to locate ephemeral foods in continuous and fragmented forests. Fissionfusion grouping also magnified the problems of object impermanence (of individuals) and dispersion manifested by food sources in the ecological realm. Thus the spatial and temporal dynamics of fruit and wooded habitats since the Miocene are reflected in important components of great ape cognition, foraging, and sociality. In contrast to great apes, cercopithecoid monkeys

have increased their plant dietary options and diversified in seasonal environments since the late Miocene. Early hominins eventually severed the habitat bias that characterized the evolution of great apes, and later expanded into diverse environments.

Keywords: great apes | cognition | environment | fruit-habitat hypothesis | extinction | variability selection

Biologie

Álvaro 2015

Leticia Álvaro, Humberto Moreira, Julio Lillo & Anna Franklin, *Color preference in red–green dichromats*. PNAS **112** (2015), 9316–9321.

Around 2 % of males have red–green dichromacy, which is a genetic disorder of color vision where one type of cone photoreceptor is missing. Here we investigate the color preferences of dichromats. We aim (i) to establish whether the systematic and reliable color preferences of normal trichromatic observers (e.g., preference maximum at blue, minimum at yellow-green) are affected by dichromacy and (ii) to test theories of color preference with a dichromatic sample. Dichromat and normal trichromat observers named and rated how much they liked saturated, light, dark, and focal colors twice. Trichromats had the expected pattern of preference. Dichromats had a reliable pattern of preference that was different to trichromats, with a preference maximum rather than minimum at yellow and a much weaker preference for blue than trichromats. Color preference was more affected in observerswho lacked the cone type sensitive to long wavelengths (protanopes) than in those who lacked the cone type sensitive to medium wavelengths (deuteranopes). Trichromats' preferences were summarized effectively in terms of cone-contrast between color and background, and yellow-blue cone-contrast could account for dichromats' pattern of preference, with some evidence for residual red–green activity in deuteranopes' preference. Dichromats' color naming also could account for their color preferences,with colors named more accurately and quickly being more preferred. This relationship between color naming and preference also was present for trichromat males but not females. Overall, the findings provide novel evidence on how dichromats experience color, advance the understanding of why humans like some colors more than others, and have implications for general theories of aesthetics.

Keywords: dichromacy | aesthetic preference | color vision | color naming

Significance: Around 2 % of males have red–green dichromacy, which is a genetic disorder of color vision that affects how well certain colors can be seen and discriminated. Humans with normal color vision are known to have systematic and reliable preferences for some colors over others (e.g., blue is liked and yellow-green is disliked). We show that red–green dichromats have a different reliable pattern of color preference in which, for example, yellow is the most, not the least, preferred color. We test current theories of color preference and provide novel evidence that how easily a color can be named is related to how much it is liked. The findings further understanding of dichromacy, color preference, and aesthetics in general.

Patel 2015

Gaurav H. Patel, Danica Yang, Emery C. Jamerson, Lawrence H. Snyder, Maurizio Corbetta & Vincent P. Ferrera, *Functional evolution of new and expanded attention networks in humans*. PNAS **112** (2015), 9454–9459.

Macaques are often used as a model system for invasive investigations of the neural substrates of cognition. However, 25 million years of evolution separate humans and macaques from their last common ancestor, and this has likely substantially impacted the function of the cortical networks underlying cognitive processes, such as attention. We examined the homology of frontoparietal networks underlying attention by comparing functional MRI data from macaques and humans performing the same visual search task. Although there are broad similarities, we found fundamental differences between the species. First, humans have more dorsal attention network areas than macaques, indicating that in the course of evolution the human attention system has expanded compared with macaques. Second, potentially homologous areas in the dorsal attention network have markedly different biases toward representing the contralateral hemifield, indicating that the underlying neural architecture of these areas may differ in the most basic of properties, such as receptive field distribution. Third, despite clear evidence of the temporoparietal junction node of the ventral attention network in humans as elicited by this visual search task, we did not find functional evidence of a temporoparietal junction in macaques. None of these differences were the result of differences in training, experimental power, or anatomical variability between the two species. The results of this study indicate that macaque data should be applied to humanmodels of cognition cautiously, and demonstrate how evolution may shape cortical networks.

Keywords: attention | human | monkey | fMRI | cortex

Significance: Macaque monkeys are often used as a model for the biological basis of human cognition. However, the two species last shared a common ancestor 25 million years ago, and in the intervening time the brain areas underlying cognition have likely evolved along different paths. We examined the similarities and differences of human and macaque brain areas underlying attention, a core cognitive ability, by recording brain activity while subjects of both species performed the same attention-demanding task. We found fundamental differences in the attention-related brain areas in the two species, including the complete absence, in monkeys, of a ventral-attention network present in humans. These results shed light on the evolution of the unique properties of the human brain.

Vance 2015

Erik Vance, *Fischfarmen für eine Milliarde Chinesen*. Spektrum der Wissenschaft **2015**, viii, 72–79.

Als größter Fischproduzent und -konsument der Welt entwickelt China Süß- und Salzwasserfarmen für Fische und Meeresfrüchte in nie da gewesenen Dimensionen. Dabei haben die Forscher auch die ökologische Nachhaltigkeit im Blick.

Während vieler Jahrhunderte befanden sich die meisten chinesischen Süßwasserfischfarmen anscheinend in einem gesunden natürlichen Gleichgewicht. Dass dem heute nicht mehr so ist, darf man der allgemeinen Umweltverschmutzung nicht allein anlasten. Denn zu den heutigen Missständen tragen die Aquakulturen selbst gehörig bei. Als beliebtester Speisefisch gilt in China der Karpfen. [...] Doch weil Karpfen ihre Nahrung schlecht verwerten, sind ihre Exkremente stickstoffreich. Der viele Stickstoff fördert das Wachstum von Algen, die Sauerstoff produzierenden Pflanzen das Licht nehmen. Am Ende leben in so einem Gewässer vorwiegend nur noch Karpfen und Algen.

Auch wenn China viele amerikanische und europäische Ansätze aufgegriffen hat, sind die Aquakulturen doch kaum miteinander vergleichbar. Der Westen bevorzugt Kaltwasserfische wie Forellen und Lachse, die sauerstoffreiches Wasser benötigen. Die Chinesen lieben Karpfen und Welse, Fische aus wenig belüfteten Gewässern. Die Vorstellung von einem heilen Ökosystem differiert ebenfalls völlig. "Ein See, den wir verschmutzt nennen, gilt für Chinesen als effizienter Nahrungs

mittellieferant", bemerkt Trond Storebakken von der Universität für Umwelt- und Biowissenschaften in Ås bei Oslo. "Er darf nur nicht umkippen, und das gelingt ihnen. Das finde ich bemerkenswert."

Datierung

Muscheler 2008

R. Muscheler, B. Kromer, S. Björck, A. Svensson, M. Friedrich, K. F. Kaiser & J. Southon, *Tree rings and ice cores reveal ^{14}C calibration uncertainties during the Younger Dryas*. Nature Geoscience **1** (2008), 263–267.

The Younger Dryas interval during the Last Glacial Termination was an abrupt return to glacial-like conditions punctuating the transition to a warmer, interglacial climate. Despite recent advances in the layer counting of ice-core records of the termination, the timing and length of the Younger Dryas remain controversial. Also, a steep rise in the concentration of atmospheric radiocarbon at the onset of the interval, recorded primarily in the Cariaco Basin, has been diYcult to reconcile with simulations of the Younger Dryas carbon cycle. Here we discuss a radiocarbon chronology from a tree-ring record covering the Late Glacial period that has not been absolutely dated. We correlate the chronology to ice-core timescales using the common cosmic production signal in tree-ring 14C and ice-core 10Be concentrations. The results of this correlation suggest that the Cariaco record may be biased by changes in the concentration of radiocarbon in the upper ocean during the early phase of the Younger Dryas climate reversal in the Cariaco basin. This bias in the marine record may also aVect the accuracy of a widely used radiocarbon calibration curve over this interval. Our treeringbased radiocarbon record is easily reconciled with simulated production rates and carbon-cycle changes associated with reduced ocean ventilation during the Younger Dryas.

Porter 2015

Robert M. Porter, *Recent Problems with Dendrochronology*. In: Peter James & Peter G. van der Veen (Hrsg.), *Solomon and Shishak: Current Perspectives from Archaeology, Epigraphy, History and Chronology*, *Proceedings of the Third BICANE Colloquium, Sidney Sussex College, Cambridge, 26-27 March 2011*. BAR International Series 2732 (Oxford 2015), 225–233.

This article aims to show that dendrochronological results can not always be trusted. There is now considerable evidence to show that Professor Kuniholm's dendrochronological work in Anatolia is unreliable. Junipers, the basis of his chronology, are unsuitable for dendrochronology as they can produce duplicate, missing or partial rings. At one site he matched up two timbers the wrong way round, as subsequently shown by carbon dating. At other sites he has repeatedly altered his dates and/or abandoned them. Kuniholm's undoing has been his tendency to publish; other dendrochronologists keep their data secret! A two year battle using the UK Freedom of Information Act has recently forced Belfast University to release its tree-ring data. This is raw data but one group have been able to analyse it and to reassemble the chronology: It was already known that there is no continuous tree-ring chronology for Ireland because, at the beginning and end of the first millennium BC, this chronology relies on links to eastern and southern England where the climate is different. It now appears that those links are unsound. Belfast's dendrochronology forms part of the International Calibration Curve which

all radiocarbon dates depend on. A possibility that there may be something wrong with the IntCal curve arose because a recent article carbon dated the fall of the Assyrian capital Nineveh (612 BC) to c. 795 BC! This conference presentation originally had three main parts: Anatolia, Europe and Nineveh. Further sections have been added on Gordion (which has a somewhat similar problem to Nineveh) and carbon dating tests on two 7th-century Egyptian mummies – these failed to confirm the problems at Nineveh and Gordion.

Richter 2000

D. Richter, B. Mauz, U. Böhner, W. Weissmüller, G. A. Wagner, G. Freund, W. J. Rink & J. Richter, *Luminescence Dating of the Middle/Upper Palaeolithic Sites 'Sesselfelsgrotte' and 'Abri I Am Schulerloch', Altmühltal, Bavaria.* In: Jörg Orschiedt & Gerd-Christian Weniger) (Hrsg.), *Neanderthals and Modern Humans – Discussing the Transition, Central and Eastern Europe from 50.000 – 30.000 B.P.* Wissenschaftliche Schriften des Neanderthal Museums 2 (Mettmann 2000), 30–41.

The TL-dating result on heated silex artefacts from Sesselfelsgrotte Mousterian layers M of 73.2 ± 11.7 ka gives a significantly younger age than the Eemian interglacial. By combining this chronometric age estimate with palaeoecological results the occupations of the M-layers can be placed into OIS 5a and at the beginning of OIS 4. The underlying part of the sequence is likely to belong to OIS 5c. The occupations, which led to the deposition of the Mousterian/Micoquian G-layers is dated to 56.0 ± 1.6 ka and can be placed at the beginning of OIS 3, probably correlated to the Oerel interstadial. The almost identical IR-OSL ages for loess from layer D indicate a high sedimentation rate around 16 ka.

The TL date on a single burnt artefact of 51.4 ± 4.5 ka from the Abri I am Schulerloch is statistically indistinguishable from the dating results of the G-layers of the Sesselfelsgrotte. As both yielded very similar industries, these age estimates give further constrain to place the Micoquian or 'Keilmesser' industries in Central Europe at the end of OIS 4 and in OIS 3.

Klima

Dutton 2015

A. Dutton et al., *Sea-level rise due to polar ice-sheet mass loss during past warm periods.* science **349** (2015), 153 & 1–9.

s349-0153-Supplement.pdf

A. Dutton, A. E. Carlson, A. J. Long, G. A. Milne, P. U. Clark, R. DeConto, B. P. Horton, S. Rahmstorf & M. E. Raymo

Interdisciplinary studies of geologic archives have ushered in a new era of deciphering magnitudes, rates, and sources of sea-level rise from polar ice-sheet loss during past warm periods. Accounting for glacial isostatic processes helps to reconcile spatial variability in peak sea level during marine isotope stages 5e and 11, when the global mean reached 6 to 9 meters and 6 to 13 meters higher than present, respectively. Dynamic topography introduces large uncertainties on longer time scales, precluding robust sea-level estimates for intervals such as the Pliocene. Present climate is warming to a level associated with significant polar ice-sheet loss in the past. Here, we outline advances and challenges involved in constraining ice-sheet sensitivity to climate change with use of paleo–sea level records.

LaViolette 2011

Paul A. LaViolette, *Evidence for a solar flare cause of the Pleistocene mass extinction*. Radiocarbon **53** (2011), 303–323.

The hypothesis is presented that an abrupt rise in atmospheric radiocarbon concentration evident in the Cariaco Basin varve record at 12,837 ± 10 cal yr BP, contemporaneous with the Rancholabrean termination, may have been produced by a super-sized solar proton event (SPE) having a fluence of ≈1.3 E 11 protons/cm-2. A SPE of this magnitude would have been large enough to deliver a lethal radiation dose of at least 3–6 Sv to the Earth's surface, and hence could have been a principal cause of the final termination of the Pleistocene megafauna and several genera of smaller mammals and birds. The event time-correlates with a large-magnitude acidity spike found at 1708.65 m in the GISP2 Greenland ice record, which is associated with high NO3 ion concentrations and a rapid rise in 10Be deposition rate, all of which are indicators of a sudden cosmicray influx. The depletion of nitrate ions within this acidic ice layer suggests that the snowpack surface at that time was exposed to intense UV for a prolonged period, which is consistent with a temporary destruction of the polar ozone layer by solar cosmic rays. The acidity event also coincides with a large-magnitude, abrupt climatic excursion and is associated with elevated ammonium ion concentrations, an indicator of global fires.

Shen 2015

Miaogen Shen et al., *Evaporative cooling over the Tibetan Plateau induced by vegetation growth*. PNAS **112** (2015), 9299–9304.

Miaogen Shen, Shilong Piao, Su-Jong Jeong, Liming Zhou, Zhenzhong Zeng, Philippe Ciais, Deliang Chen, Mengtian Huang, Chun-Sil Jin, Laurent Z. X. Li, Yue Li, Ranga B. Myneni, Kun Yang, Gengxin Zhang, Yangjian Zhang & Tandong Yao

In the Arctic, climate warming enhances vegetation activity by extending the length of the growing season and intensifying maximum rates of productivity. In turn, increased vegetation productivity reduces albedo, which causes a positive feedback on temperature. Over the Tibetan Plateau (TP), regional vegetation greening has also been observed in response to recent warming. Here, we show that in contrast to arctic regions, increased growing season vegetation activity over the TP may have attenuated surface warming. This negative feedback on growing season vegetation temperature is attributed to enhanced evapotranspiration (ET). The extra energy available at the surface, which results from lower albedo, is efficiently dissipated by evaporative cooling. The net effect is a decrease in daily maximum temperature and the diurnal temperature range, which is supported by statistical analyses of in situ observations and by decomposition of the surface energy budget. A daytime cooling effect from increased vegetation activity is also modeled from a set of regional weather research and forecasting (WRF) mesoscale model simulations, but with a magnitude smaller than observed, likely because theWRF model simulates a weaker ET enhancement. Our results suggest that actions to restore native grasslands in degraded areas, roughly one-third of the plateau, will both facilitate a sustainable ecological development in this region and have local climate cobenefits. More accurate simulations of the biophysical coupling between the land surface and the atmosphere are needed to help understand regional climate change over the TP, and possible larger scale feedbacks between climate in the TP and the Asian monsoon system.

Keywords: climate change | feedback | evapotranspiration | vegetation | Tibetan Plateau

Significance: Understanding land-surface biophysical feedbacks to the atmosphere is needed if we are to simulate regional climate accurately. In the Arctic, previous studies have shown that enhanced vegetation growth decreases albedo and amplifies warming. In contrast, on the Tibetan Plateau, a statistical model based on in situ observations and decomposition of the surface energy budget suggests that increased vegetation activity may attenuate daytime warming by enhancing evapotranspiration (ET), a cooling process. A regional climate model also simulates daytime cooling when prescribed with increased vegetation activity, but with a magnitude smaller than observed, likely because this model simulates weaker ET enhancement in response to increased vegetation growth.

Kultur

Carneiro 1967

Robert L. Carneiro, *On the Relationship between Size of Population and Complexity of Social Organization*. Southwestern Journal of Anthropology **23** (1967), 234–243.

During the course of this study it became increasingly clear that population size and societal complexity were closely related. Finally it was decided to use the data compiled in the study to determine just how close this relationship was. Since it seemed likely that population would be more closely related to the organizational aspects of a society than to all aspects of its culture taken together, it was decided to remove from the list traits which were primarily technological or ideological and to retain only those that were primarily organizational. A trait was designated as organizational if it involved the coordinated activity of two or more persons.

A reasonably close approximation to this relationship is given by the simpler equation, N = SQRT(P). That is to say, the number of organizational traits in a single-community society is equal (roughly) to the square root of its population.

Meller 2009

Harald Meller, *Arm und reich, stark und schwach, Überlegungen zur Geschichte der sozialen Stratifizierungen am Beispiel der Archäologie Mitteldeutschlands*. In: Rüdiger Fikentscher (Hrsg.), *Begräbniskulturen in Europa*. mdv aktuell 5 (Halle 2009), 16–16.

Wir können also festhalten, dass sich im Grabbrauch für weit mehr als 1.500 Jahre zwischen 5500 und etwa 3800 v. Chr. kaum soziale Differenzierungen belegen lassen. Dies ändert sich mit den beschriebenen monumentalen Langhügeln der Baalberger Kultur, den Tierbeigaben der Kugelamphorenkultur, aber auch mit dem ersten Auftreten von Gold sowie anderen Distinktionsmitteln während des Spätneolithikums. Eine steile soziale Pyramide mit vermutlich zentraler Macht, erheblichen materiellen Unterschieden und der Möglichkeit, größere Gebiete zu kontrollieren, zeigt sich erst in der Frühbronzezeit ab 2000 v. Chr. Spätestens um 1600 v. Chr. scheint dieses System zu zerfallen. Es wird in der darauf folgenden Mittelbronzezeit zwar ebenfalls durch eine Ranggesellschaft ersetzt, diese hat jedoch eher den Charakter lokal- oder kleinregional wirksamer Häuptlingstümer.

Dass diese zentralen Machtstrukturen am Ende der Frühbronzezeit, wohl nach der Deponierung der Himmelsscheibe von Nebra, zerfallen, ist ein Prozess, wie er sich in prästaatlichen Kulturen immer wieder beobachten lässt. Dass es gelang, diese zentralen Herrschaften über Jahrhunderte bis zum Ende der Frühbronzezeit (um 1600 v. Chr.) zu stabilisieren und – wie die unbefestigten, weit über das Land gestreuten Siedlungen dieser Zeit zeigen – einen Zustand relativen Friedens und großer Prosperität zu erreichen, ist im Gegenteil besonders bemerkenswert.

Pfeffer 2013

Jeffrey Pfeffer, *You're still the same, Why theories of power hold over time and across contexts.* Academy of Management Perspectives **27** (2013), 269–280.

Changes in the values and careers of particularly younger employees and changes in organizations, including the reduction of hierarchical levels and greater use of teams and matrix structures—combined with new communication technologies and more social networking—have produced calls for new organization theories for these new realities. Using organizational power and influence as a focus, I argue that fundamental theoretical processes remain largely unchanged in their explanatory power, in part because such phenomena can be linked to survival advantages. The new workers-new work arguments are consistent with the continuing emphasis on novelty and theoretical innovation in the organization sciences, an emphasis that, while promulgated in virtually all the journals, may poorly serve the development of reliable and valid knowledge and hinder our ability to provide useful advice for both organizations and their employees.

Saile 2012

Thomas Saile, *Salt in the Neolithic of Central Europe, Production and distribution.* In: Vassil Nikolov & Krum Bacvarov (Hrsg.), *Salz und Gold: die Rolle des Salzes im prähistorischen Europa, Akten der internationaler Fachtagung (Humboldt-Kolleg) in Provadia, Bulgarien 30 September – 4 October 2010.* (Veliko Tarnovo 2012), 225–238.

The high value of salt in prehistoric Central Europe was based on its value as a physiological and nutritional necessity and its numerous possibilities of application. With regard to the methods of obtaining salt, evaporation of salt from inland sources originated earlier than rock salt mining, which in turn preceded the rise of sea-salt extraction on the coasts of the North Sea and the English Channel. The earliest evidence of salt evaporation is documented in western Galicja (Barycz) during the Middle Neolithic (Lengyel culture) and in Central Germany (Halle) in the later Neolithic (Bernburg culture). During the Early Bronze Age, the salt-producing region along the middle reaches of the Saale River around Halle became increasingly prominent, and at the latest during the Urnield culture rock-salt mining was initiated at Hallstatt around the 12th century cal. BC. A general expansion of salt production can be noticed in Central Europe during the transition from the Bronze Age to the Iron Age, when salt production started in Lorraine and the coastal areas. Aside from these areas, the major Central European salt production places of the La Tène period were Dürrnberg, Bad Nauheim and Schwäbisch Hall. In the wake of Roman expansion, the Central European salt production and exchange system collapsed to a large extent, with the apparent exception of Schwäbisch Hall and some coastal places. After the Migration Period (4th–7th centuries AD), the slow and gradual recovery of the Central European salt industry provided the basis for a production and trading system that continued into Early Modern times.

Mesolithikum

Snir 2015

Ainit Snir, Dani Nadel, Iris Groman-Yaroslavski, Yoel Melamed, Marcelo Sternberg, Ofer Bar-Yosef & Ehud Weiss, *The Origin of Cultiva-*

tion and Proto-Weeds, Long Before Neolithic Farming. PLoS ONE **10** (2015), e131422. DOI:10.1371/journal.pone.0131422.

pone10-e0131422-Supplement1.pdf, pone10-e0131422-Supplement2.pdf

Weeds are currently present in a wide range of ecosystems worldwide. Although the beginning of their evolution is largely unknown, researchers assumed that they developed in tandem with cultivation since the appearance of agricultural habitats some 12,000 years ago. These rapidly-evolving plants invaded the human disturbed areas and thrived in the new habitat. Here we present unprecedented new findings of the presence of "proto-weeds" and small-scale trial cultivation in Ohalo II, a 23,000-year-old hunter-gatherers' sedentary camp on the shore of the Sea of Galilee, Israel. We examined the plant remains retrieved from the site (ca. 150,000 specimens), placing particular emphasis on the search for evidence of plant cultivation by Ohalo II people and the presence of weed species. The archaeobotanicallyrich plant assemblage demonstrates extensive human gathering of over 140 plant species and food preparation by grinding wild wheat and barley. Among these, we identified 13 well-known current weeds mixed with numerous seeds of wild emmer, barley, and oat. This collection provides the earliest evidence of a human-disturbed environment—at least 11 millennia before the onset of agriculture—that provided the conditions for the development of "proto-weeds", a prerequisite for weed evolution. Finally, we suggest that their presence indicates the earliest, small-scale attempt to cultivate wild cereals seen in the archaeological record.

Neolithikum

Larsen 2006

Clark Spencer Larsen, *The agricultural revolution as environmental catastrophe, Implications for health and lifestyle in the Holocene*. Quaternary International **150** (2006), 12–20.

One of the most fundamental developments in the history of our species—and one having among the most profound impacts on landscapes and the people occupying them—was the domestication of plants and animals. In addition to altering landscapes around the globe from the terminal Pleistocene and early Holocene, the shift from foraging to farming resulted in negative and multiple consequences for human health. Study of human skeletal remains from archaeological contexts shows that the introduction of grains and other cultigens and the increase in their dietary focus resulted in a decline in health and alterations in activity and lifestyle. Although agriculture provided the economic basis for the rise of states and development of civilizations, the change in diet and acquisition of food resulted in a decline in quality of life for most human populations in the last 10,000 years.

Politik

Blanton 2015

Richard E. Blanton, *Theories of ethnicity and the dynamics of ethnic change in multiethnic societies, Special Feature: Perspective*. PNAS **112** (2015), 9176–9181.

I modify Fredrik Barth's approach, which sees ethnic group building as a signaling system, to place it within a framework that draws from collective action and costly signaling theories. From these perspectives, ethnic signaling, although representing a costly penalty to group members, is one effective form of communication

that facilitates collective management of resources. I then identify three contexts in which the benefits of ethnic group building are likely to outweigh its signaling costs: in politically chaotic refuge and periphery zones; in the context of long-distance specialist trading groups; and within the territorial scope of failed states. I point to selected data from the Mughal and Aztec polities to illustrate how a combination of effective public goods management, in highly collective states, and the growth of highly integrated commercial economies will render ethnic group building superfluous.

Keywords: ethnicity | collective action | costly signaling

Fang 2015

Hui Fang, Gary M. Feinman & Linda M. Nicholas, *Imperial expansion, public investment, and the long path of history, China's initial political unification and its aftermath*. PNAS **112** (2015), 9224–9229.

The Neolithic (ca. 8000–1900 B.C.) underpinnings of early Chinese civilization had diverse geographic and cultural foundations in distinct traditions, ways of life, subsistence regimes, and modes of leadership. The subsequent Bronze Age (ca. 1900–221 B.C.) was characterized by increasing political consolidation, expansion, and heightened interaction, culminating in an era of a smaller number of warring states. During the third century B.C., the Qin Dynasty first politically unified this fractious landscape, across an area that covers much of what is now China, and rapidly instituted a series of infrastructural investments and other unifying measures, many of which were maintained and amplified during the subsequent Han Dynasty. Here, we examine this historical sequence at both the national and macroscale and more deeply for a small region on the coast of the Shandong Province, where we have conducted several decades of archaeological research. At both scales, we examine apparent shifts in the governance of local diversity and some of the implications both during Qin–Han times and for the longer durée.

Keywords: China | empire | archaeological settlement patterns | political unification

Significance: During the Bronze Age, the diverse cultural traditions of the earlier Chinese Neolithic were interconnected into more expansive political and economic networks that culminated in the establishment of the region's first empires (Qin and Han). Drawing on documents and archaeology, we outline the processes associated with this political consolidation and steps that were taken during imperial governance at both the national and a specific local scale (coastal Shandong Province), where we have conducted two decades of archaeological settlement pattern research. Through the juxtaposition of macro- and microscale analysis, we document human impacts of infrastructural investments, interactive technologies, and ideological tenets that were implemented during the Qin–Han dynasties, which helped establish the rough spatial configuration of what has since been China.

Frangipane 2015

Marcella Frangipane, *Different types of multiethnic societies and different patterns of development and change in the prehistoric Near East, Special Feature: Perspective*. PNAS **112** (2015), 9182–9189.

After briefly examining the forms of cultural contact in pre- and protohistoric societies in relation to the problem of the varying perception of territories and their "borders" as well as of "membership" in those societies, and after a brief reconsideration of the concept of culture and ethnicity in such archaic contexts, this paper then examines three examples of multiethnic societies in the Near East, and specifically in Upper Mesopotamia and Southeast Anatolia, in the fifth, fourth,

and at the beginning of the third millennia before the common era (BCE), respectively. These examples are dealt with as emblematic cases of different models of society, types of interaction with alien groups, levels of integration, and development dynamics. Each of these cases is examined with respect to its socioeconomic context, the archeological evidence of "multiethnicity," the types of interaction between different components, the degree of cultural integration achieved, and the effects on the dynamics of change and the development of the societies examined. By analyzing and comparing these examples, the paper aims to show how interethnic contact impacted differently on different societies according to their types, the reasons and purposes of the interaction, and the degree of integration achieved.

Keywords: intercultural contact | economic integration | cultural integration | Upper Mesopotamia | East Anatolia

The meeting between groups of southern Ubaid culture and local Halaf communities in Upper Mesopotamia was that of a model of interaction between an organizationally "dominant" foreign community and a local community in crisis. The effect was a radical hybridization of the two cultures, with the substantial acquisition of the main features of the alien model and the virtual disappearance of the local culture and way of life. The result was a structural change, developing toward a new society.

One might conclude from these cases that it was only full integration between interacting ethnic/cultural components that led to lasting development, albeit by sacrificing certain cultural traditions, whereas the lack of integration, even in diverse sociopolitical contexts and models of interaction, was a source of instability and conflict.

Goldstein 2015

Paul S. Goldstein, *Multiethnicity, pluralism, and migration in the south central Andes, An alternate path to state expansion.* PNAS **112** (2015), 9202–9209.

The south central Andes is known as a region of enduring multiethnic diversity, yet it is also the cradle of one the South America's first successful expansive-state societies. Social structures that encouraged the maintenance of separate identities among coexistent ethnic groups may explain this apparent contradiction. Although the early expansion of the Tiwanaku state (A.D. 600–1000) is often interpreted according to a centralized model derived from Old World precedents, recent archaeological research suggests a reappraisal of the socio-political organization of Tiwanaku civilization, both for the diversity of social entities within its core region and for the multiple agencies behind its wider program of agropastoral colonization. Tiwanaku's sociopolitical pluralism in both its homeland and colonies tempers some of archaeology's global assumptions about the predominant role of centralized institutions in archaic states.

Lightfoot 2015

Kent G. Lightfoot, *Dynamics of change in multiethnic societies, An archaeological perspective from colonial North America.* PNAS **112** (2015), 9216–9223.

This Perspective presents an overview of the archaeology of pluralistic colonies (approximately late 1500s–1800s) in North America. It complements the other special feature papers in this issue on ancient societies in Mesoamerica, the Near East, the Armenian Highlands, Peru, and China by presenting another body of literature for examining the dynamics of change in multiethnic societies from a different time and place. In synthesizing archaeological investigations of mercantile, plantation, and missionary colonies, this Perspective shows how this research is

relevant to the study of pluralism in both historic and ancient societies in three ways. (i) It enhances our understanding of interethnic relationships that took place in complex societies with imposing political hierarchies and labor structures. (ii) It helps us to refine the methods used by archaeologists to define and analyze multiethnic communities that were spatially delimited by ethnic neighborhoods. Finally, (iii) it presents more than a half century of experimentation with various models (e.g., acculturation, creolization, ethnogenesis, and hybridity) that have been used to study the dynamics of culture change in multiethnic societies.

Keywords: European colonies | indigenous peoples | enslaved laborers | colonial hierarchies | ethnic neighborhoods

MANZANILLA 2015

Linda R. Manzanilla, *Dynamics of change in multiethnic societies, Special Feature: Introduction*. PNAS **112** (2015), 9174–9175.

This Special Feature is devoted to exploring the dynamics of change in past multiethnic societies, and the economic, social, and political factors behind it. The main issue that interested me when organizing this Special Feature was how cooperation and tensions between different ethnic components within a particular sociopolitical background generated transformation in these societies.

Nevertheless, these cases of multiethnic pacts are feeble and prelude tensions between different interests, often of an economic nature. Tensions occur when multiethnic organizations display strategies that are contrary or different to those of the state where they insert themselves.

MANZANILLA 2015

Linda R. Manzanilla, *Cooperation and tensions in multiethnic corporate societies using Teotihuacan, Central Mexico, as a case study*. PNAS **112** (2015), 9210–9215.

In this paper, I address the case of a corporate society in Central Mexico. After volcanic eruptions triggered population displacements in the southern Basin of Mexico during the first and fourth centuries A.D., Teotihuacan became a multiethnic settlement. Groups from different backgrounds settled primarily on the periphery of the metropolis; nevertheless, around the core, intermediate elites actively fostered the movement of sumptuary goods and the arrival of workers from diverse homelands for a range of specialized tasks. Some of these skilled craftsmen acquired status and perhaps economic power as a result of the dynamic competition among neighborhoods to display the most lavish sumptuary goods, as well as to manufacture specific symbols of identity that distinguished one neighborhood from another, such as elaborate garments and headdresses. Cotton attire worn by the Teotihuacan elite may have been one of the goods that granted economic importance to neighborhood centers such as Teopancazco, a compound that displayed strong ties to the Gulf Coast where cotton cloth was made. The ruling elite controlled raw materials that came from afar whereas the intermediate elite may have been more active in providing other sumptuary goods: pigments, cosmetics, slate, greenstone, travertine, and foreign pottery. The contrast between the corporate organization at the base and top of Teotihuacan society and the exclusionary organization of the neighborhoods headed by the highly competitive intermediate elite introduced tensions that set the stage for Teotihuacan's collapse.

Keywords: Teotihuacan | craft specialization | multiethnic | neighborhood center | corporate

Significance: Teotihuacan was born as a complex multiethnic settlement that originally accommodated populations displaced by volcanic eruptions that devastated the southern Basin of Mexico. Soon, the city became an inclusive society

where people from other regions of Mesoamerica could work mainly as qualified craftspeople (particularly garment makers and lapidary specialists), as well as builders, musicians, and military personnel. This society capitalized on the knowledge, technical expertise, and experience that foreigners brought to the city. Each neighborhood competed with the others in displaying the finest crafts, the rarest raw materials, and the most diverse sumptuary goods. This competition gave rise to a highly complex society, but one with inherent contradictions.

Nelson 2015

Ben A. Nelson & Debra L. Martin, *Symbolic bones and interethnic violence in a frontier zone, northwest Mexico, ca. 500–900 C.E.* PNAS **112** (2015), 9196–9201.

Although extensive deposits of disarticulated, commingled human bones are common in the prehispanic Northern Frontier of Mesoamerica, detailed bioarchaeological analyses of them are not. To our knowledge, this article provides the first such analysis of bone from a full residential-ceremonial complex and evaluates multiple hypotheses about its significance, concluding that the bones actively represented interethnic violence as well as other relationships among persons living and dead. Description of these practices is important to the discussion of multiethnic societies because the frontier was a context where urbanism and complexity were emerging and groups with the potential to form multiethnic societies were interacting, possibly in the same ways that groups did before the formation of larger multiethnic city-states in the core of Mesoamerica.

Keywords: interethnic conflict | social violence | human bone taphonomy | archaeology | Mesoamerica

Significance: Persistent interethnic violence has affected some global regions for centuries. Recent research reveals that major outbreaks are often prevented or limited by creative social action. In the prehispanic Northern Frontier of Mesoamerica, approximately 500–900 C.E., people of different ethnic backgrounds struggled for standing in a shifting sociopolitical landscape. Evidence is consistent with long-term social violence, but also with the use of the dead to communicate a range of symbolic messages. Complex arrays of human skeletal material commemorated past physical conflicts, possibly discouraging their repetition, while also connecting the living symbolically with a metaphysical realm inhabited by ancestors and deities. This article highlights the postmortem agency of the dead and illustrates their roles in structuring social relations.

Rothman 2015

Mitchell S. Rothman, *Early Bronze Age migrants and ethnicity in the Middle Eastern mountain zone.* PNAS **112** (2015), 9190–9195.

The Kura-Araxes cultural tradition existed in the highlands of the South Caucasus from 3500 to 2450 BCE (before the Christian era). This tradition represented an adaptive regime and a symbolically encoded common identity spread over a broad area of patchy mountain environments. By 3000 BCE, groups bearing this identity had migrated southwest across a wide area from the Taurus Mountains down into the southern Levant, southeast along the Zagros Mountains, and north across the Caucasus Mountains. In these new places, they became effectively ethnic groups amid already heterogeneous societies. This paper addresses the place of migrants among local populations as ethnicities and the reasons for their disappearance in the diaspora after 2450 BCE.

Keywords: ethnicity | Kura-Araxes cultural tradition | migration | mountain cultures

Significance: This analysis shows the complex interaction of ethnic groups in antiquity, adapting to new locations and adopting and ultimately, assimilating into a majority culture. It occurs in a background of mountain valleys and highland plains, where evershifting populations carve out a living and an identity.

Religion

Renfrew 2008

Colin Renfrew, *Neuroscience, evolution and the sapient paradox*, *The factuality of value and of the sacred*. Phil. Trans. Royal Society B **363** (2008), 2041–2047.

The human genome, and hence the human brain at birth, may not have changed greatly over the past 60 000 years. Yet many of the major behavioural changes that we associate with most human societies are very much more recent, some appearing with the sedentary revolution of some 10 000 years ago. Among these are activities implying the emergence of powerful concepts of value and of the sacred. What then are the neuronal mechanisms that may underlie these consistent, significant (and emergent) patterns of behaviour?

Keywords: evolution of mind | speciation and tectonic phases | sedentary revolution | value | the sacred

Story or Book

Harris 2015

Michael Harris, *The mercurial mathematician*. nature **523** (2015), 406–407.

Michael Harris relishes a biography of the playful, complicated group theorist John Horton Conway.

Genius At Play: The Curious Mind of John Horton Conway. Siobhan Roberts. Bloomsbury: 2015.

Roberts's "kaleidoscope of inquiry" is a marvel for its virtuoso juggling of narrative speeds, reminiscences, implausible digressions and long passages of precise, comprehensible mathematics. She packs it all into a tidy chronology framed by the story of a road movie starring Conway; she plays his amanuensis, occasional driver and "back channel" through which the world communicates with this most mercurial and untidy of mathematicians.

"I'm confused at some times," Conway says. "In fact ... it's a permanent state." He was speaking of mathematics, but his casual attitude to the mundane details of his personal history poses a challenge, even for a biographer as accomplished as Roberts.

Pilous 2015

Roland Pilous, *Wenn das Unglaubliche passiert*. Spektrum der Wissenschaft **2015**, viii, 92.

Dieses Buch liefert Antworten darauf, warum extrem unwahrscheinliche Ereignisse manchmal doch eintreten.

David J. Hand. Die Macht des Unwahrscheinlichen. Warum Zufälle, Wunder und unglaubliche Dinge jeden Tag passieren. Aus dem Englischen von Werner Roller. C.H.Beck, München 2015. 288 Seiten, E 19, 95

Hand, D. (2014). The improbability principle : why coincidences, miracles, and rare events happen every day. New York: Scientific American/Farrar, Straus and Giroux.

Hand kann mit seiner Begeisterung die Leser durchaus anstecken. Leider besteht jedoch die Gefahr, dass man angesichts der unzähligen Geschichten und Musterfälle irgendwann genug hat. Zwar kann man in einem solchen Fall prinzipiell einige Seiten überspringen. Doch die manchmal unzusammenhängende Darstellung und die mitunter sehr beliebigen Überschriften fördern nicht unbedingt den Überblick. Zum Glück enthält der Buchepilog eine gute Zusammenfassung. Wer leicht verständliche Exkurse in die Mathematik mag, anekdotische Erzählweise zu schätzen weiß und ein Faible für Statistik hat, dem lässt sich das Werk empfehlen.