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Literatur

Aktuell

Yong 2013

Ed Yong, Heidi Ledford & Richard van Noorden, *3 ways to blow the whistle*. nature **503** (2013), 454–457.

Reporting suspicions of scientific fraud is rarely easy, but some paths are more effective than others.

Amerika

Erickson 2005

David L. Erickson, Bruce D. Smith, Andrew C. Clarke, Daniel H. Sandweiss & Noreen Tuross, *An Asian origin for a 10,000-year-old domesticated plant in the Americas*. PNAS **102** (2005), 18315–18320.

pnas102-18315-Supplement.zip

New genetic and archaeological approaches have substantially improved our understanding of the transition to agriculture, a major turning point in human history that began 10,000–5,000 years ago with the independent domestication of plants and animals in eight world regions. In the Americas, however, understanding the initial domestication of New World species has long been complicated by the early presence of an African enigma, the bottle gourd (Lagenaria siceraria). Indigenous to Africa, it reached East Asia by 9,000–8,000 before present (B.P.) and had a broadNew World distribution by 8,000 B.P. Here we integrate genetic and archaeological approaches to address a set of long-standing core questions regarding the introduction of the bottle gourd into the Americas. Did it reach the New World directly from Africa or through Asia? Was it transported by humans or ocean currents? Was it wild or domesticated upon arrival? Fruit rind thickness values and accelerator mass spectrometer radiocarbon dating of archaeological specimens indicate that the bottle gourd was present in the Americas as a domesticated plant by 10,000 B.P., placing it among the earliest domesticates in the New World. Ancient DNA sequence analysis of archaeological bottle gourd specimens and comparison with modern Asian and African landraces identify Asia as the source of its introduction. We suggest that the bottle gourd and the dog, two "utility" species, were domesticated long before any food crops or livestock species, and that both were brought to the Americas by Paleoindian populations as they colonized the New World.

ancient DNA | archaeology | bottle gourd | domestication

Anthropologie

Almécija 2013

Sergio Almécija, Melissa Tallman, David M. Alba, Marta Pina, Salvador Moyà-Solà & William L. Jungers, *The femur of Orrorin tugenensis exhibits morphometric affinities with both Miocene*

apes and later hominins. Nature Communications **4** (2013), 2888. DOI:10.1038/ncomms3888.

NatComm04-2888-Supplement.pdf

Orrorin tugenensis (Kenya, ca. 6 Ma) is one of the earliest putative hominins. Its proximal femur, BAR 1002'00, was originally described as being very human-like, although later multivariate analyses showed an australopith pattern. However, some of its traits (for example, laterally protruding greater trochanter, medially oriented lesser trochanter and presence of third trochanter) are also present in earlier Miocene apes. Here, we use geometric morphometrics to reassess the morphological affinities of BAR 1002'00 within a large sample of anthropoids (including fossil apes and hominins) and reconstruct hominoid proximal femur evolution using squared-change parsimony. Our results indicate that both hominin and modern great ape femora evolved in different directions from a primitive morphology represented by some fossil apes. Orrorin appears intermediate between Miocene apes and australopiths in shape space. This evidence is consistent with femoral shape similarities in extant great apes being derived and homoplastic and has profound implications for understanding the origins of human bipedalism.

Domínguez-Rodrigo 2013

Manuel Domínguez-Rodrigo et al., *First Partial Skeleton of a 1.34-Million-Year-Old Paranthropus boisei from Bed II, Olduvai Gorge, Tanzania.* PLoS ONE **8** (2013), e80347. DOI:10.1371/journal.pone.0080347.

Manuel Domínguez-Rodrigo, Travis Rayne Pickering, Enrique Baquedano, Audax Mabulla, Darren F. Mark, Charles Musiba, Henry T. Bunn, David Uribelarrea, Victoria Smith, Fernando Diez-Martin, Alfredo Pérez-González, Policarpo Sánchez, Manuel Santonja, Doris Barboni, Agness Gidna, Gail Ashley, José Yravedra, Jason L. Heaton & Maria Carmen Arriaza

Recent excavations in Level 4 at BK (Bed II, Olduvai Gorge, Tanzania) have yielded nine hominin teeth, a distal humerus fragment, a proximal radius with much of its shaft, a femur shaft, and a tibia shaft fragment (cataloged collectively as OH 80). Those elements identified more specifically than to simply Hominidae gen. et sp. indet are attributed to Paranthropus boisei. Before this study, incontrovertible P. boisei partial skeletons, for which postcranial remains occurred in association with taxonomically diagnostic craniodental remains, were unknown. Thus, OH 80 stands as the first unambiguous, dentally associated Paranthropus partial skeleton from East Africa. The morphology and size of its constituent parts suggest that the fossils derived from an extremely robust individual who, at 1.338±0.024 Ma (1 sigma), represents one of the most recent occurrences of Paranthropus before its extinction in East Africa.

van der Made 2011

Jan van der Made, *Biogeography and climatic change as a context to human dispersal out of Africa and within Eurasia.* Quaternary Science Reviews **30** (2011), 1353–1367.

The dispersal of the genus Homo occurred against a background of continuous environmental change. Here, dispersals of large mammals through the Levantine Corridor and into Western Europe and Java are studied and compared to existing records of climatic change and dispersals of early humans and lithic industry.
The first human dispersal (with Oldowan lithic industry) out of Africa, around or shortly before 1.8 Ma may have been triggered by biological evolution and increased social organisation, rather than environmental change. After that event,

increasing aridity led to decreased faunal exchange between Africa and Eurasia and may have isolated the human populations of Africa and Africa. Southern (Java) and Eastern Asia (China) also seem to have been isolated. Human dispersal into Western Europe may have been limited by closed environments in Central Europe until about 1.2 Ma ago, when faunal dispersal into Europe suggests the cyclic spread of open environments to the west. Acheulean technology originated in Africa, some 1.6–1.5 Ma ago, but its dispersal into Eurasia may have been obstructed by an arid Southwest Asia, until broadly about 0.9 Ma ago, when faunal exchange suggests that the area became temporarily less dry. By 0.6–0.5 Ma ago it reached Europe.

Klima

Drijfhout 2013

Sybren Drijfhout, Emily Gleeson, Henk A. Dijkstra & Valerie Livina, *Spontaneous abrupt climate change due to an atmospheric blocking – sea-ice – ocean feedback in an unforced climate model simulation.* PNAS **110** (2013), 19713–19718.

Abrupt climate change is abundant in geological records, but climate models rarely have been able to simulate such events in response to realistic forcing. Here we report on a spontaneous abrupt cooling event, lasting for more than a century, with a temperature anomaly similar to that of the Little Ice Age. The event was simulated in the preindustrial control run of a highresolution climate model, without imposing external perturbations. Initial cooling started with a period of enhanced atmospheric blocking over the eastern subpolar gyre. In response, a southward progression of the sea-ice margin occurred, and the sea-level pressure anomaly was locked to the sea-ice margin through thermal forcing. The cold-core high steered more cold air to the area, reinforcing the sea-ice concentration anomaly east of Greenland. The sea-ice surplus was carried southward by ocean currents around the tip of Greenland. South of 70°N, sea ice already started melting and the associated freshwater anomaly was carried to the Labrador Sea, shutting off deep convection. There, surface waters were exposed longer to atmospheric cooling and sea surface temperature dropped, causing an even larger thermally forced high above the Labrador Sea. In consequence, east of Greenland, anomalous winds changed from north to south, terminating the event with similar abruptness to its onset. Our results imply that only climate models that possess sufficient resolution to correctly represent atmospheric blocking, in combination with a sensitive sea-ice model, are able to simulate this kind of abrupt climate change.
climate modeling | thermohaline circulation | Great Salinity Anomaly

Halfar 2013

Jochen Halfar, Walter H. Adey, Andreas Kronz, Steffen Hetzinger, Evan Edinger & William W. Fitzhugh, *Arctic sea-ice decline archived by multicentury annual-resolution record from crustose coralline algal proxy*. PNAS **110** (2013), 19737–19741.

Northern Hemisphere sea ice has been declining sharply over the past decades and 2012 exhibited the lowest Arctic summer sea-ice cover in historic times. Whereas ongoing changes are closely monitored through satellite observations, we have only limited data of past Arctic sea-ice cover derived from short historical records, indirect terrestrial proxies, and low-resolution marine sediment cores. A multicentury time series from extremely long-lived annual increment-forming crustose coralline algal buildups now provides the first high-resolution in situ marine proxy for

sea-ice cover. Growth and Mg/Ca ratios of these Arctic-wide occurring calcified algae are sensitive to changes in both temperature and solar radiation. Growth sharply declines with increasing sea-ice blockage of light from the benthic algal habitat. The 646-y multisite record from the Canadian Arctic indicates that during the Little Ice Age, sea ice was extensive but highly variable on subdecadal time scales and coincided with an expansion of ice-dependent Thule/Labrador Inuit sea mammal hunters in the region. The past 150 y instead have been characterized by sea ice exhibiting multidecadal variability with a long-term decline distinctly steeper than at any time since the 14th century.

Tedstone 2013

Andrew J. Tedstone et al., *Greenland ice sheet motion insensitive to exceptional meltwater forcing*. PNAS **110** (2013), 19719–19724.

Andrew J. Tedstone, Peter W. Nienow, Andrew J. Sole, Douglas W. F. Mair, Thomas R. Cowton, Ian D. Bartholomew & Matt A. King

Changes to the dynamics of the Greenland ice sheet can be forced by various mechanisms including surface-melt–induced ice acceleration and oceanic forcing of marine-terminating glaciers. We use observations of ice motion to examine the surface melt–induced dynamic response of a land-terminating outlet glacier in southwest Greenland to the exceptional melting observed in 2012. During summer, meltwater generated on the Greenland ice sheet surface accesses the ice sheet bed, lubricating basal motion and resulting in periods of faster ice flow. However, the net impact of varying meltwater volumes upon seasonal and annual ice flow, and thus sea level rise, remains unclear. We show that two extreme melt events (98.6 % of the Greenland ice sheet surface experienced melting on July 12, the most significant melt event since 1889, and 79.2 % on July 29) and summer ice sheet runoff $\approx 3.9\,\sigma$ above the 1958–2011 mean resulted in enhanced summer ice motion relative to the average melt year of 2009. However, despite record summer melting, subsequent reduced winter ice motion resulted in 6 % less net annual ice motion in 2012 than in 2009. Our findings suggest that surface melt–induced acceleration of land-terminating regions of the ice sheet will remain insignificant even under extreme melting scenarios.

ice sheet dynamics | ice sheet hydrology | ice sheet melt | global positioning systems

Kultur

Kelly 2013

Raymond C. Kelly, *The evolution of lethal intergroup violence*. PNAS **102** (2013), 15294–15298.

Recent findings and analyses in evolutionary biology, archaeology, and ethnology provide a favorable conjuncture for examining the evolution of lethal intergroup violence among hominids during the 2.9-million-year Paleolithic time span. Here, I seek to identify and investigate the main turning points in this evolutionary trajectory and to delineate the periodization that follows from this inquiry.

collective violence | armed conflict | war | hominid evolution

Shimelmitz 2013

Ron Shimelmitz & Danny Rosenberg, *Dull-edged Weapons and Low-level Fighting in the Late Prehistoric Southern Levant*. Cambridge Archaeological Journal **23** (2013), 433–452.

While duels and other types of fighting with a relatively low level of lethal risk are well known from the ethnographic record, these have been less studied from an archaeological perspective. These fights are different from 'war' in the lack of killing intent and they are commonly referred to as 'ritual fighting', thus implying the social significance of the act and not just the outcome. Our study concentrates on the Late Pottery Neolithic and Chalcolithic periods of the southern Levant from which the physical evidence of violence is relatively scarce, although conflicts are assumed to have intensified due to the increase in long-term settlements and density of population. We will argue that the three types of weapons found during these periods — maceheads, slingstones and transverse arrowheads — are characterized by dull or blunt peripheries and were intentionally designed not to cause maximal injury or inflict lethal blows. These weapons are well represented only after the hunting of wild game dramatically declined and we suggest that they represent the conduct of low-level fighting, consequently indicating the presence of rules and social organization that are essential elements for the formation of early complex societies.

Methoden

Foley 1992

R. A. Foley & M. M.Lahr, *Beyond "out of Africa", Reassessing the origins of Homo sapiens*. Journal of Human Evolution **22** (1992), 523–529.

The origins of Homo sapiens have traditionally filled the black hole of Pleistocene studies. While potassium-argon and related techniques are on hand to solve the chronological problems of the early Pleistocene, and I4C the details of recent prehistory, fossils and events in the period from about 300 to 40 Ky are notoriously difficult to date. Various exotic techniques have appeared sporadically, the results of which were largely believable in proportion to how well they fitted expectations. These techniques, though, were erratic, had large errors and very sensitive assumptions. However, as a recent conference demonstrated, the rate at which both new dates and new experimental techniques have been emerging in the last few years means that these new techniques must become comprehensible to, and scrutinized by, the palaeoanthropological community. If H. sapiens is 100 Ky old, then it is quite important to know how this date is obtained.

The answers turn out to be largely reassuring in terms of technique, if somewhat less so when the precise geological context of some of the dates is taken into account. The general conclusion reached, with remarkably little dissension from the physical scientists, was that these techniques are for the first time giving reliable estimates of age for the critical periods of the later middle and early late Pleistocene, and perhaps more importantly, supplying sufficiently large numbers of dates for consistency to be estimated. There is scope for considerable optimism, for a period that seemed undatable now seems accessible, and the artificial compression horizon of 40 Ky (the limits of conventional 14C) is gradually disappearing. Such optimism must not obscure the fact that resolution remains at between 10–20 %, and this will preclude much fine scale analysis, particularly in relation to the numerous climatic events of the later Pleistocene.

Mittelpaläolithikum

Riel-Salvatore 2013

Julien Riel-Salvatore, Ingrid C. Ludeke, Fabio Negrino & Brigitte M.

Holt, *A Spatial Analysis of the Late Mousterian Levels of Riparo Bombrini (Balzi Rossi, Italy)*. Canadian Journal of Archaeology **37** (2013), 70–92.

We present a preliminary analysis of the spatial distribution of various artifact classes in the Late Mousterian levels of Riparo Bombrini (northwest Italy). This work shows the presence of a consistent gap in artifacts across all levels, which is interpreted as reflecting the position of the dripline prior to the shelter's collapse. Hearths are identified in levels Ml-3, M4 and M5, and their position at the back of the shelter is similar to that of "sleeping hearths" identified at other Mousterian sites. Lastly, the distribution of artifacts is shown to co-vary with the nature of the prevalent mobility strategies in use at different times over the site's occupational history. Notably, use of the site as a logistical base camp is correlated with the presence of hearths and the accumulation of noisome debris beyond the dripline and outside of the shelter. Other uses of the site seem to have favored the discard of some classes of artifacts within the shelter itself. This shows that Neanderthals were indeed able to organize their use of space in patterned and somewhat predictable manners, and that the length and nature of their occupation of the rocksheiter need to be taken into account in such analyses.