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References

Afrika

Atherton 1983

John H. Atherton, *Ethnoarchaeology in Africa*. African Archaeological Review **1** (1983), 75–104.

After a brief introduction, this paper discusses the various types of ethnoarchaeological sources useful to African prehistorians. These include 'living archaeology' or the ethnography of material culture, experimental archaeology in the field, published materials (including ethnographies and travellers' accounts), manuscript materials and museum collections. Discussion of application is centred around three topics: economy, settlement patterns and ethnicity. Several examples are given to show how ethnoarchaeological materials are (and sometimes are not) useful in the reconstruction of prehistoric situations. The paper concludes with a brief discussion of some of the ways in which archaeological, environmental and ethnoarchaeological data can be productively combined; it is suggested that a systems approach is the most appropriate.

Lane 2010

Paul J. Lane, *Developing Landscape Historical Ecologies in Eastern Africa, An Outline of Current Research and Potential Future Directions*. African Studies **69** (2010), 299–322.

The concept of 'landscape historical ecology' has been adopted by many researchers across the spectrum of earth sciences, social sciences and humanities in recent decades as a means of offering both conceptual and practical tools for joining very different kinds of information into an assessment of human-environment interaction. The aims of this article are to outline the analytical potential of adopting the key precepts of historical ecology for the interpretation of the archaeological and historical signatures of the last 500 years of human settlement in eastern Africa, and to describe ongoing research being undertaken as part of the HEEAL project, with particular reference to the ecological and other transformations initiated following intensification of the ivory trade. The concluding section discusses the relevance of adopting similar approaches to the investigation of different southern African landscapes within the context of the FYI project.

Keywords: landscape historical ecology | eastern Africa | HEEAL project | ivory trade

Aktuell

Balietti 2016

Stefano Balietti, Robert L. Goldstone & Dirk Helbing, *Peer review and competition in the Art Exhibition Game*. PNAS **113** (2016), 8414–8419.

To investigate the effect of competitive incentives under peer review, we designed a novel experimental setup called the Art Exhibition Game. We present experimental evidence of how competition introduces both positive and negative

effects when creative artifacts are evaluated and selected by peer review. Competition proved to be a double-edged sword: on the one hand, it fosters innovation and product diversity, but on the other hand, it also leads to more unfair reviews and to a lower level of agreement between reviewers. Moreover, an external validation of the quality of peer reviews during the laboratory experiment, based on 23,627 online evaluations on Amazon Mechanical Turk, shows that competition does not significantly increase the level of creativity. Furthermore, the higher rejection rate under competitive conditions does not improve the average quality of published contributions, because more high-quality work is also rejected. Overall, our results could explain why many ground-breaking studies in science end up in lower-tier journals. Differences and similarities between the Art Exhibition Game and scholarly peer review are discussed and the implications for the design of new incentive systems for scientists are explained.

Keywords: peer review | competition | creativity | innovation | fairness

Significance: Competition is an essential mechanism in increasing the effort and performance of human groups in real life. However, competition has side effects: it can be detrimental to creativity and reduce cooperation. We conducted an experiment called the Art Exhibition Game to investigate the effect of competitive incentives in environments where the quality of creative products and the amount of innovation allowed are decided through peer review. Our approach is general and can provide insights in domains such as clinical evaluations, scientific admissibility, and science funding. Our results show that competition leads to more innovation but also to more unfair reviews and to a lower level of agreement between reviewers. Moreover, competition does not improve the average quality of published works.

Borrell 2016

Brendan Borrell, *Physics on two wheels*. nature **535** (2016), 338–341.

Jim Papadopoulos has spent a lifetime pondering bicycles in motion. His work, once nearly lost, has found fresh momentum.

Goldblatt 2016

Colin Goldblatt, *Comment on "Long-term climate forcing by atmospheric oxygen concentrations"*. science **353** (2016), 132.

Poulsen et al. (Reports, 12 June 2015, p. 1238) argued that lower atmospheric oxygen levels during the Phanerozoic would have given a warmer climate. However, radiative and atmospheric structure changes under lower pressure both cause cooling, making their result unusual in that a hierarchy of models gives opposing results. Scrutiny of howradiative and cloud processes were represented, and a mechanistic explanation of the results, are required.

Miller 2016

Greg Miller, *Brain scans are prone to false positives, study says*. science **353** (2016), 208–209.

Common software settings may have skewed the statistics for thousands of studies.

Morawietz 2016

Tobias Morawietz, Andreas Singraber, Christoph Dellago & Jörg Behler, *How van der Waals interactions determine the unique properties of water*. PNAS **113** (2016), 8368–8373.

Whereas the interactions between water molecules are dominated by strongly directional hydrogen bonds (HBs), it was recently proposed that relatively weak,

isotropic van der Waals (vdW) forces are essential for understanding the properties of liquid water and ice. This insight was derived from ab initio computer simulations, which provide an unbiased description of water at the atomic level and yield information on the underlying molecular forces. However, the high computational cost of such simulations prevents the systematic investigation of the influence of vdW forces on the thermodynamic anomalies of water. Here, we develop efficient ab initio-quality neural network potentials and use them to demonstrate that vdW interactions are crucial for the formation of water's density maximum and its negative volume of melting. Both phenomena can be explained by the flexibility of the HB network, which is the result of a delicate balance of weak vdW forces, causing, e.g., a pronounced expansion of the second solvation shell upon cooling that induces the density maximum.

Keywords: water structure | van der Waals interactions | neural network potentials | ab initio liquid water | density-functional theory

Significance: Despite its simple chemical formula, H2O, water is a complex substance with a variety of unusual properties resulting from its ability to form hydrogen bonds. A famous example for the anomalous behavior ofwater is the fact that it exhibits a density maximum at 4 °C. Here, we unravel the density anomaly of water on the molecular level using a powerful ab initio-based simulation technique. We show that weak van der Waals forces crucially modulate the flexibility of the hydrogen bond network, giving rise to the density maximum in water and causing ice to be less dense than the liquid.

Poulsen 2016

Christopher J. Poulsen, Clay Tabor & Joseph White, *"Long-term climate forcing by atmospheric oxygen concentrations"*, *Response to Comment*. science **353** (2016), 132.

Goldblatt argues that a decrease in pressure broadening of absorption lines in an atmosphere with low oxygen leads to an increase in outgoing longwave radiation and atmospheric cooling. We demonstrate that cloud and water vapor feedbacks in a global climate model compensate for these decreases and lead to atmospheric warming.

Seligman 2016

Benjamin Seligman, Gabi Greenberg & Shripad Tuljapurkar, *Equity and length of lifespan are not the same*. PNAS **113** (2016), 8420–8423.

Efforts to understand the dramatic declines in mortality over the past century have focused on life expectancy. However, understanding changes in disparity in age of death is important to understanding mechanisms of mortality improvement and devising policy to promote health equity. We derive a novel decomposition of variance in age of death, a measure of inequality, and apply it to cause-specific contributions to the change in variance among the G7 countries (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States) from 1950 to 2010. We find that the causes of death that contributed most to declines in the variance are different from those that contributed most to increase in life expectancy; in particular, they affect mortality at younger ages. We also find that, for two leading causes of death [cancers and cardiovascular disease (CVD)], there are no consistent relationships between changes in life expectancy and variance either within countries over time or between countries. These results show that promoting health at younger ages is critical for health equity and that policies to control cancer and CVD may have differing implications for equity.

Keywords: health equity | age of death variance | life expectancy | inequality | mortality

Significance: We find that the causes of death that have led to greater equality among lifespans are different from the causes that have led to longer average lifespan, also called life expectancy. Control of leading causes of death, such as heart disease, increased life expectancy, whereas medical interventions on infant mortality led to greater equality. Action to promote health equity will require further mitigation of the killers of young people rather than solely focusing on the most common causes of death.

Travaglia 2016

Alessio Travaglia, Reto Bisaz, Eric S. Sweet, Robert D. Blitzer & Cristina M. Alberini, *Infantile amnesia reflects a developmental critical period for hippocampal learning*. Nature Neuroscience (2016), preprint, 1–11. DOI:10.1038/nn.4348.

NatNeur2016-Travaglia-Supplement.pdf

Episodic memories formed during the first postnatal period are rapidly forgotten, a phenomenon known as 'infantile amnesia'. In spite of this memory loss, early experiences influence adult behavior, raising the question of which mechanisms underlie infantile memories and amnesia. Here we show that in rats an experience learned during the infantile amnesia period is stored as a latent memory trace for a long time; indeed, a later reminder reinstates a robust, context-specific and long-lasting memory. The formation and storage of this latent memory requires the hippocampus, follows a sharp temporal boundary and occurs through mechanisms typical of developmental critical periods, including the expression switch of the NMDA receptor subunits from 2B to 2A, which is dependent on brain-derived neurotrophic factor (BDNF) and metabotropic glutamate receptor 5 (mGluR5). Activating BDNF or mGluR5 after training rescues the infantile amnesia. Thus, early episodic memories are not lost but remain stored long term. These data suggest that the hippocampus undergoes a developmental critical period to become functionally competent.

Anthropologie

Dembo 2016

Mana Dembo et al., *The evolutionary relationships and age of Homo naledi, An assessment using dated Bayesian phylogenetic methods*. Journal of Human Evolution **97** (2016), 17–26.

Mana Dembo, Davorka Radovčić, Heather M. Garvin, Myra F. Laird, Lauren Schroeder, Jill E. Scott, Juliet Brophy, Rebecca R. Ackermann, Chares M. Musiba, Darryl J. de Ruiter, Arne Ø. Mooers & Mark Collard

Homo naledi is a recently discovered species of fossil hominin from South Africa. A considerable amount is already known about H. naledi but some important questions remain unanswered. Here we report a study that addressed two of them: "Where does H. naledi fit in the hominin evolutionary tree?" and "How old is it?" We used a large supermatrix of craniodental characters for both early and late hominin species and Bayesian phylogenetic techniques to carry out three analyses. First, we performed a dated Bayesian analysis to generate estimates of the evolutionary relationships of fossil hominins including H. naledi. Then we employed Bayes factor tests to compare the strength of support for hypotheses about the relationships of H. naledi suggested by the best-estimate trees. Lastly, we carried out a resampling analysis to assess the accuracy of the age estimate for H. naledi yielded by the dated Bayesian analysis. The analyses strongly supported the hypothesis that H. naledi forms a clade with the other Homo species and

Australopithecus sediba. The analyses were more ambiguous regarding the position of H. naledi within the (Homo, Au. sediba) clade. A number of hypotheses were rejected, but several others were not. Based on the available craniodental data, Homo antecessor, Asian Homo erectus, Homo habilis, Homo floresiensis, Homo sapiens, and Au. sediba could all be the sister taxon of H. naledi. According to the dated Bayesian analysis, the most likely age for H. naledi is 912 ka. This age estimate was supported by the resampling analysis. Our findings have a number of implications. Most notably, they support the assignment of the new specimens to Homo, cast doubt on the claim that H. naledi is simply a variant of H. erectus, and suggest H. naledi is younger than has been previously proposed.

Keywords: Dinaledi hominins | Bayesian phylogenetic analysis | Morphological clock | Genus Homo

Grabung

Keller 2015

Marcel Keller, Andreas Rott, Nadja Hoke, Heiner Schwarzberg, Birgit Regner-Kamlah, Michaela Harbeck & & Joachim Wahl, *United in Death – Related by Blood? Genetic and Archeometric Analyses of Skeletal Remains from the Neolithic Earthwork Bruchsal-Aue*. American Journal of Physical Anthropology **157** (2015), 458–471.

AmJPhysAnth157-0458-Supplement1.tif, AmJPhysAnth157-0458-Supplement2.tif, AmJPhysAnth157-0458-Supplement3.docx, AmJPhysAnth157-0458-Supplement4.docx, AmJPhysAnth157-0458-Supplement5.docx, AmJPhysAnth157-0458-Supplement6.docx

Objectives: Straight next to a segment of the outer ditch of the Late Neolithic Michelsberg Culture earthwork of Bruchsal-Aue in SW-Germany (ca. 4250–3650 calBC), a multiple burial of eight individuals (two male adults and six children) plus a subsequent child burial was excavated. In this study, we applied a multidisciplinary approach to elucidate interpersonal relationships and life histories within this collective.

Materials and methods: To determine the identity of this collective, we performed aDNA analyses in addition to osteological examination using HVR I plus Y-chromosomal and autosomal STR profiling to find evidence for kinship relations. Strontium isotopic analyses were used to reconsider migrational behavior. To find evidence for a specific social affiliation, the individual diet was reconstructed by performing nitrogen and carbon isotopic analyses. Furthermore, radiocarbon-dating was carried out to integrate the burial context into an absolute timeframe. Two nearby single burials were included in the analyses for comparison.

Results: Because of a shared HVR I haplotype, three pairs of individuals were most likely linked by kinship, and statistical testing on autosomal STR profiles shows a high probability for the pair of two men being brothers. Although it cannot be excluded, isotopic data gave no clear proof for migration. A rather poor health status is indicated by skeletal stress markers even though the isotope data attest to a diet rich in meat and fish.

Discussion: Although clear kinship relations among the infants remain unconfirmed, a relationship could also be indicated by the positioning of the bodies in the burial pit. Whereas a common cause of death might have been the presupposition for their special treatment, interpersonal relationships were likely the decisive factor for the multiple burial.

Keywords: STRs | mtDNA | kinship | stable isotopes | Michelsberg Culture

Isotope

Doppler 2015

Thomas Doppler et al., *Landscape opening and herding strategies: Carbon isotope analyses of herbivore bone collagen from the Neolithic and Bronze Age lakeshore site of Zurich-Mozartstrasse, Switzerland.* Quaternary International (2015), preprint, 1–11. DOI:10.1016/j.quaint.2015.09.007.

Thomas Doppler, Claudia Gerling, Volker Heyd, Corina Knipper, Thomas Kuhn, Moritz F. Lehmann, Alistair W. G. Pike & Jörg Schibler

Tankersley 2016

Kenneth Barnett Tankersley, Denis G. Conover & David L. Lentz, *Stable carbon isotope values ($\delta^{13}C$) of purslane (Portulaca oleracea) and their archaeological significance.* Journal of Archaeological Science: Reports **7** (2016), 189–194.

Elemental Analyzer Isotope RatioMass Spectrometrywas used to determine the d13C values of common purslane (Portulaca oleracea), a highly edible and nutritious annual succulent and member of the Portulacaceae family, which uses both C4 fixation and Crassulacean acid metabolism (CAM) photosynthesis. The d13C values for the plant range between .11.2 ‰ and .20.5 ‰ (C4 .11.2 ‰ to .13.9 ‰, CAM.17.6 ‰ to .20.5 ‰), which overlaps with d13C values for maize (Zeamays).9.1 ‰ to.17.3 ‰. Both plants occur on late Holocene archaeological sites in eastern North America and likely contributed to the d13C ratios reported for ancient human collagen and hydroxyapatite. Taphonomically, P. oleracea has a lower archaeological visibility because it is completely edible and the seeds are tiny (0.02 to 0.76 mm) in comparison to maize kernels and cobs. Therefore, we can no longer assume that maize was the only significant plant food in the late Holocene diet of eastern North America, which elevated d13C ratios in ancient human tissues.

Keywords: Stable carbon isotope value | Photosynthesis | Archaeobotany | Paleobotany | Paleodiet | Common purslane (Portulaca oleracea) | Maize (Zea mays) | Eastern North America | Late Holocene | Bioarchaeology

Judentum

Cohen 1999

Shaye J. D. Cohen, *The Beginnings of Jewishness, Boundaries, Varieties, Uncertainties.* Hellenistic Culture and Society 31 (Berkeley 1999).

An unravelling of one of the most complex issues of late antiquity, showing how elements of ethnicity, nationality and religion were understood and applied in the construction of Jewish identity – by Jews, by gentiles and by the state.

Yerushalmi 1982

Yosef Hayim Yerushalmi, *Zakhor, Jewish history and Jewish memory.* Samuel and Althea Stroum Lectures in Jewish Studies 3 (Seattle 1982).

Kultur

Lochy 2016

Aliette Lochy, Marie Van Reybroeck & Bruno Rossion, *Left cortical specialization for visual letter strings predicts rudimentary knowledge of letter-sound association in preschoolers*. PNAS **113** (2016), 8544–8549.

pnas113-08544-Supplement.avi

Reading, one of the most important cultural inventions of human society, critically depends on posterior brain areas of the left hemisphere in proficient adult readers. In children, this left hemispheric cortical specialization for letter strings is typically detected only after approximately 1 y of formal schooling and reading acquisition. Here, we recorded scalp electrophysiological (EEG) brain responses in 5-y-old (n = 40) prereaders presented with letter strings appearing every five items in rapid streams of pseudofonts (6 items per second). Within 2 min of recording only, letter strings evoked a robust specific response over the left occipito-temporal cortex at the predefined frequency of 1.2 Hz (i.e., 6 Hz/5). Interindividual differences in the amplitude of this electrophysiological response are significantly related to letter knowledge, a preschool predictor of later reading ability. These results point to the high potential of this rapidly collected behavior-free measure to assess reading ability in developmental populations. These findings were replicated in a second experiment (n = 26 preschool children),where familiar symbols and line drawings of objects evoked right-lateralized and bilaterally specific responses, respectively, showing the specificity of the early left hemispheric dominance for letter strings. Collectively, these findings indicate that limited knowledge of print in young children, before formal education, is sufficient to develop specialized left lateralized neuronal circuits, thereby pointing to an early onset and rapid impact of left hemispheric reentrant sound mapping on posterior cortical development.

Keywords: EEG | letter strings | children | cortical specialization | left hemisphere

Significance: This study reports a robust and specific marker of sensitivity to print in 5-y-old prereaders, in the form of an electrophysiological response recorded over visual areas of the left hemisphere in only 2 min. The significant correlation with rudimentary letter knowledge in preschoolers, a behavioral measure taken independently, suggests rapid domain-specific specialization of neuronal circuits, beyond mere visual familiarity. These findings also highlight the potential of an objective and highly sensitive behavior-free approach to assess letter knowledge, a precursor of reading ability, in developmental populations.

Metallzeiten

Stokstad 2016

Erik Stokstad, *A time capsule from Bronze Age Britain*. science **353** (2016), 210–211.

Charred river houses offer an extraordinary view of everyday life 3000 years ago.

Each roundhouse had a rich inventory of domestic items. “I’ve been an archaeologist for 30 years and I’ve never seen anything this spectacular or exciting,” says Stephen Trow, research director of Historic England.

Artifacts include balls of thread, hanks of yarn, and fine linen. Thread counts are as high as 30 per centimeter, comparable to the best cloth known in Europe at the time. “I counted them several times, thinking ‘This can’t be right,”’ Harris

says. So far she has not seen clues, such as cuffs, that would reveal whether the fabrics were part of clothing or served other functions.

Either way, the blaze appears to have spread quickly. "It was rapid, smokefilled, and incredibly destructive," he says. "You'd have a couple of minutes to scrabble around." The inhabitants apparently escaped, as no human skeletons have been found in the debris. They never returned to rebuild, which converted their misfortune into a stroke of luck for archaeologists today.

Neolithikum

Gibbons 2016

Ann Gibbons, *First farmers' motley roots*. science **353** (2016), 207–208.

Unrelated groups adopted farming at about the same time in different parts of the Fertile Crescent.

Hellenthal found that the early Zagros Mountain farmers have left a genetic legacy in Pakistanis, Afghans, and others, particularly in Zoroastrians in Iran. But the ancient Iranian DNA was dramatically different from that of the western Anatolian farmers. The two groups of farmers, who lived about 2000 kilometers and 2000 years apart, must have descended from completely different groups of hunter-gatherers who separated 46,000 to 77,000 years ago, Burger says.

They found that the Zagros people descend from a group of basal Eurasians who separated from the ancestors of all other people outside of Africa 50,000 to 60,000 years ago—before other non-Africans interbred with Neandertals. So the Zagros Mountain farmers had less Neandertal DNA than the western Anatolian farmers, whose ancestors must have branched off later.

Did these early people learn farming from each other, or was it invented more than once? Here, opinion differs. Because new kinds of food preparation tools turn up first in the Levant, Bar-Yosef thinks farming sprouted here: "Zagros foothills people adopted agriculture from the Levant."

Story or Book

Adamo 2016

Shelley Adamo, *Master manipulators*. science **353** (2016), 128.

Emerging research on how parasites affect host behavior fuels speculation about their influence on human history.

This Is Your Brain on Parasites. How Tiny Creatures Manipulate Our Behavior and Shape Society. Kathleen McAuliffe Houghton Miffin Harcourt, 2016. 292 pp.

Parasites exert a powerful selective force, and behaviors that helped humans avoid infection should still be with us today, she argues. Some evolutionary psychologists suggest that human behaviors such as mate choice, whether a society develops democracy, and the decision to go to war may all be influenced by pathogen pressure.

One of the strengths of the book is McAuliffe's exploration of alternative explanations for counterintuitive theories. This presentation style alerts the reader that some of the ideas she recounts are imaginative speculation and not considered consensus. For readers who prefer an authoritarian guide, the caveats and alternative perspectives may be unsatisfying. However, such an approach is preferable to the sensationalism that often surrounds work in this field.

Graff 2016

Sarah R. Graff, *The Power of Feasts*. Cambridge Archaeological Journal **26** (2016), 532–533.

The Power of Feasts. From Prehistory to the Present, by Brian Hayden, 2014. Cambridge: Cambridge University Press; ISBN 978-1-107-61764-3 softcover £ 24.99, $ 36.99; xi+426 pp., 103 figs.

One of the main components in the book is Hayden's emphasis on the significant and transformative role of aggrandizers. Another significant component to Hayden's argument is his emphasis on evolutionary change. Hayden's two main considerations of aggrandizers and evolutionary change are brought together in a theoretical approach he calls 'paleo-political ecology' (p. 6). He explains that this approach works to understand not only how surpluses are produced, but also how they are used and manipulated by aggrandizers to promote their self-interests. Feasts, Hayden states, are about amassing surplus foods to bring people together and create some advantages (p. 12).

The most important contribution that Hayden's book makes is his breadth of examples and his synthesis of large quantities of data. For example, in Chapter 4, although he makes his theories on aggrandizer strategies in 'transegalitarian' societies explicitly prominent, Hayden also goes through most, if not all, of the different theories of feasting (pp. 52–69) and the possible consequences (pp. 69–75). After that, he provides many different ethnographic examples of 'transegalitarian hunter-gatherers' to provide examples of the theories and the consequences (pp. 75–96). These combinations of data, especially paying equal attention to the archaeological, are a welcome and significant contribution to research on feasting and its meaning in societies.

Stewart 2016

Ian Stewart, *The Fourth Law of Humanics, Small steps to freedom.* nature **535** (2016), 460.