

## Literatur

### Aktuell

#### BOHANNON 2013

John Bohannon, *Who's Afraid of Peer Review?* [science](#) **342** (2013), 60–65.

A spoof paper concocted by Science reveals little or no scrutiny at many open-access journals.

The most basic obligation of a scientific journal is to perform peer review, arXiv founder Ginsparg says. He laments that a large proportion of openaccess scientific publishers “clearly are not doing that.” Ensuring that journals honor their obligation is a challenge that the scientific community must rise to. “Journals without quality control are destructive, especially for developing world countries where governments and universities are filling up with people with bogus scientific credentials,” Ginsparg says.

#### BRYDEN 2013

John Bryden, Richard J. Gill, Robert A. A. Mitton, Nigel E. Raine & Vincent A. A. Jansen, *Chronic sublethal stress causes bee colony failure.* [EcolLett](#) (2013), preprint, 1–7. DOI:10.1111/ele.12188.

[EcolLett2013-preprint-Supplement1026.pdf](#)

Current bee population declines and colony failures are well documented yet poorly understood and no single factor has been identified as a leading cause. The evidence is equivocal and puzzling: for instance, many pathogens and parasites can be found in both failing and surviving colonies and field pesticide exposure is typically sublethal. Here, we investigate how these results can be due to sublethal stress impairing colony function. We mathematically modelled stress on individual bees which impairs colony function and found how positive density dependence can cause multiple dynamic outcomes: some colonies fail while others thrive. We then exposed bumblebee colonies to sublethal levels of a neonicotinoid pesticide. The dynamics of colony failure, which we observed, were most accurately described by our model. We argue that our model can explain the enigmatic aspects of bee colony failures, highlighting an important role for sublethal stress in colony declines.

**Keywords:** Environmental stressor, imidacloprid, mathematical model, neonicotinoid pesticide, pollinator decline.

#### CHAMBERLAIN 2013

Gary E. Chamberlain, *Predictive effects of teachers and schools on test scores, college attendance, and earnings.* [PNAS](#) **110** (2013), 17176–17182.

I studied predictive effects of teachers and schools on test scores in fourth through eighth grade and outcomes later in life such as college attendance and earnings. For example, predict the fraction of a classroom attending college at age 20 given the test score for a different classroom in the same school with the same teacher and given the test score for a classroom in the same school with a different teacher. I would like to have predictive effects that condition on averages over many classrooms, with and without the same teacher. I set up a factor model that, under

certain assumptions, makes this feasible. Administrative school district data in combination with tax data were used to calculate estimates and do inference.  
education production function | unmeasured inputs | teacher effects

### CULOTTA 2013

Elizabeth Culotta, *Brain Stimulation Sparks ‘Machiavellian’ Choices. science* **342** (2013), 25.

Turning up this brain region with tDCS did not merely make people more norm-compliant in all situations, Ruff notes. During the baseline round, participants with a positively charged electrode—which boosted rLPFC activity—selfishly kept even more money to themselves than when the current was off, thus violating the norm. But once they faced a risk of punishment, the norm was reinforced, and they shared even more than they had during the sham trial. The neural mechanism we identified seems Machiavellian, in that it allows participants to flexibly adjust their behavior to the presence or absence of punishment threats, Ruff says. (The women playing under a negatively charged electrode, which decreased activity in this brain region, made opposite choices, giving away more money in the baseline round but changing their behavior much less when facing possible punishment.)

### FONTES-VILLALBA 2013

Maelán Fontes-Villalba, Pedro Carrera-Bastos & Loren Cordain, *African hominin stable isotopic data do not necessarily indicate grass consumption. PNAS* **110** (2013), E4055.

The point in time ( $\approx 3.5$  Mya) at which the C4 signature begins to increase occurs simultaneously with the earliest known use (before 3.39 Mya) of stone tools to cut flesh from animal carcasses and to extract marrow from their bones. In addition, the gathering of small animals, invertebrates, and fish likely contributed to early hominin diet.

The “expensive tissue hypothesis” suggests a reduction in hominin gut size and metabolic activity and a concurrent increase in brain size starting  $\approx 2.5$  Mya that was resultant from increased animal food consumption with higher dietary quality, although this hypothesis has been recently disputed. Furthermore, grass leaves and seeds are devoid of arachidonic acid (20:4n6) and docosahexanoic acid (22:6n3), which are necessary structural fatty acids required for the synthesis of brain and neural tissues.

Other nutrients essential to present day Homo sapiens (and presumably for hominins) are vitamin B12 and iodine, which are scarce or nonexistent in plant foods, but abundant in animal flesh and organs. These foods, along with meats from grazing animals, likely represent the dominant dietary source for the increasing C4 signature in our African ancestors.

### KURDZIEL 2013

Laura Kurdziel, Kasey Duclos & Rebecca M. C. Spencer, *Sleep spindles in midday naps enhance learning in preschool children. PNAS* **110** (2013), 17267–17272.

Despite the fact that midday naps are characteristic of early childhood, very little is understood about the structure and function of these sleep bouts. Given that sleep benefits memory in young adults, it is possible that naps serve a similar function for young children. However, children transition from biphasic to monophasic sleep patterns in early childhood, eliminating the nap from their daily sleep schedule. As such, naps may contain mostly light sleep stages and serve little function for learning and memory during this transitional age. Lacking scientific understanding of the function of naps in early childhood, policy makers may eliminate

preschool classroom nap opportunities due to increasing curriculum demands. Here we show evidence that classroom naps support learning in preschool children by enhancing memories acquired earlier in the day compared with equivalent intervals spent awake. This nap benefit is greatest for children who nap habitually, regardless of age. Performance losses when nap-deprived are not recovered during subsequent overnight sleep. Physiological recordings of naps support a role of sleep spindles in memory performance. These results suggest that distributed sleep is critical in early learning; when short-term memory stores are limited, memory consolidation must take place frequently.

development | education

#### LOZANO 2013

Marina Lozano, Maria Eulàlia Subirà, José Aparicio, Carlos Lorenzo & Gala Gómez-Merino, *Toothpicking and Periodontal Disease in a Neanderthal Specimen from Cova Foradà Site (Valencia, Spain)*. *PLoS ONE* **8** (2013), e76852. DOI:10.1371/journal.pone.0076852.

We present a Neanderthal maxilla (CF-1) from Cova Forada' site (Oliva, Valencia, Spain) with periodontal disease and evidence of attempts to alleviate pain with the use of a toothpick. Two interproximal grooves have been found on the distal surfaces of the upper left Pm3 and M1 of CF-1 maxilla. The location, morphology and size of the grooves coincide with other interproximal grooves found on the teeth of other fossil specimens. Heavy dental wear and periodontal disease would have caused the Cova Foradà Neanderthal specimen pain and discomfort, which the individual attempted to mitigate using some kind of dental probe.

#### MEDNICK 2013

Sara C. Mednick, *Napping helps preschoolers learn*. *PNAS* **110** (2013), 17171–17172.

In both children and adults, the quality of sleep (i.e., minutes of sleep stages and quantity of sleep features) is correlated with the magnitude of memory improvement. In adults, nonrapid eye movement (non-REM) sleep yields less forgetting than a comparable period of REM sleep or waking activity.

#### MORINIS 2013

Julia Morinis, Claire Carson & Maria A. Quigley, *Effect of teenage motherhood on cognitive outcomes in children: a population-based cohort study*. *Archives of Disease in Childhood* (2013), preprint, 1–6. DOI:10.1136/archdischild-2012-302525.

**Objective** To examine the association between teenage motherhood and cognitive development at 5 years.

**Design** Data from Millennium Cohort Study, a prospective, nationally representative UK cohort of 18 818 infants born between 2000 and 2001. Participants 12 021 (64%) mother-child pairs from white, English-speaking, singleton pregnancies were included.

**Methods** Cognitive ability at 5 years was measured by the British Ability Scales II. Difference in mean cognitive scores across maternal age groups was estimated using linear regression, with adjustment for potential confounders and mediators.

**Results** 617 (5%) children were born to mothers aged  $\leq 18$  years. Our analysis revealed that children of teenage mothers had significantly lower cognitive scores compared with children of mothers aged 25–34 years: difference in mean score for verbal ability 8.9 (10.88 to 6.86,  $p < 0.001$ ); non-verbal ability 7.8 (10.52 to 5.19,  $p < 0.001$ ); spatial ability 4.7 (6.39 to 3.07,  $p < 0.001$ ), which is equivalent

to an average delay of 11, 7 and 4 months, respectively. After adjustment for perinatal and sociodemographic factors, the effect of young maternal age on non-verbal and spatial ability mean scores was attenuated. A difference persisted in the mean verbal ability scores 3.8 (6.34 to 1.34,  $p=0.003$ ), equivalent to an average delay of 5 months. Conclusions Results suggest that the difference observed in the initial analyses for non-verbal and spatial skills are almost entirely explained by marked inequalities in sociodemographic circumstances and perinatal risk. However, there remains a significant adverse effect on verbal abilities in the children born to teenage mothers.

#### PACE 2012

Leann Pace, *How Will Declining Religious Literacy in the United States Affect Ancient Near Eastern Archaeology? Some Thoughts from the Front Lines*. *Near Eastern Archaeology* **75** (2012), 186–187.

#### PARK 2013

Kyoo-Chul Park, Shreerang S. Chhatre, Siddarth Srinivasan, Robert E. Cohen & Gareth H. McKinley, *Optimal Design of Permeable Fiber Network Structures for Fog Harvesting*. *Langmuir* (2013), preprint, 1–9. DOI:10.1021/la402409f.

Langmuir2013-preprint-Supplement1026.pdf

Fog represents a large untapped source of potable water, especially in arid climates. Numerous plants and animals use textural and chemical features on their surfaces to harvest this precious resource. In this work, we investigate the influence of the surface wettability characteristics, length scale, and weave density on the fog-harvesting capability of woven meshes. We develop a combined hydrodynamic and surface wettability model to predict the overall fog-collection efficiency of the meshes and cast the findings in the form of a design chart. Two limiting surface wettability constraints govern the re-entrainment of collected droplets and clogging of mesh openings. Appropriate tuning of the wetting characteristics of the surfaces, reducing the wire radii, and optimizing the wire spacing all lead to more efficient fog collection. We use a family of coated meshes with a directed stream of fog droplets to simulate a natural foggy environment and demonstrate a five-fold enhancement in the fog-collecting efficiency of a conventional polyolefin mesh. The design rules developed in this work can be applied to select a mesh surface with optimal topography and wetting characteristics to harvest enhanced water fluxes over a wide range of natural convected fog environments.

#### SPONHEIMER 2013

Matt Sponheimer et al., *On a reluctance to conjecture about animal food consumption, Reply to Fontes-Villalba et al.* *PNAS* **110** (2013), E4056.

Matt Sponheimer, Zeresenay Alemseged, Thure E. Cerling, Frederick E. Grine, William H. Kimbel, Meave G. Leakey, Julia A. Lee-Thorp, Fredrick Kyalo Manthi, Kaye E. Reed, Bernard A. Wood & Jonathan G. Wynn

We are reluctant to speculate about the fatty acid and micronutrient requirements of early hominins and their dietary implications. We simply note that most primates, including some modern humans, flourish on diets that are dominated by plant foods. Indeed, among extant catarrhine primates it is only modern humans with a technologically sophisticated hunting armamentarium that have been documented to subsist (under certain conditions) on large amounts of animal flesh.

We agree with Fontes-Villalba et al. that it would be surprising if most early hominins did not consume animal foods to some extent, given our knowledge of the diets of our closest kin (*Pan* spp.) and the observed behavior of other savanna primates (6). We caution, however, that it is not possible at present to meaningfully address the relative importance of faunivory for any Pliocene or early Pleistocene hominin species, including those attributed to the genus *Homo*. It is for this reason that we eschewed conjecture about animal food consumption in the 11 or so taxa discussed in our papers.

## Amerika

### ADOVASIO 1997

J. M. Adovasio & D. R. Pedler, *Monte Verde and the antiquity of humankind in the Americas*. [Antiquity 71 \(1997\), 573–580](#).

The Smithsonian Institution Press (with a patience one no longer expects of a scholarly publisher) early this year issued the second volume of Toni Dillehay's monograph on Monte Verde, in far southern Chile—8 years after the first volume (Dillehay 1989; 1997). What is the standing of the site? Is it the long-sought-after proof of a 'pre-Clovis' human presence in the Americas? And if it is, why is it by the southern tip of the Western Hemisphere, rather than close to its northern portal from Siberia?

### DICKINSON 2011

William R. Dickinson, *Geological perspectives on the Monte Verde archeological site in Chile and pre-Clovis coastal migration in the Americas*. [Quaternary Research 76 \(2011\), 201–210](#).

Discovery of the Monte Verde archeological site in Chile overturned the previous consensus that the first Americans into the New World from Asia were the makers of Clovis projectile points, and rejuvenated the hypothesis that migration through the Americas occurred largely on portions of the Pacific continental shelf exposed by Pleistocene drawdown in eustatic sea level. The postulate of travel along a paleoshoreline now hidden underwater is an attractive means to posit pre-Clovis human movement southward from Beringia to Chile without leaving traces of migration onshore. Geologic analyses of the Pleistocene paleoenvironment at Monte Verde and of the morphology of the potential migration route along the continental shelf raise questions that have not been fully addressed. The periglacial setting of Monte Verde may call its antiquity into question and the narrowness of the Pacific continental shelf of the Americas makes it unlikely that people could travel the length of the Americas without impacting ground still onshore and no farther inland than Monte Verde itself. Geological perspectives on Monte Verde and coastal migration jointly suggest that the Clovis-first hypothesis for peopling the New World may have been abandoned prematurely.

Keywords: Chile | Clovis | Coastal migration | Continental shelf | Geomorphology | Glacial geology | Monte Verde | Pre-Clovis

### FAGUNDES 2008

Nelson J. R. Fagundes et al., *Mitochondrial Population Genomics Supports a Single Pre-Clovis Origin with a Coastal Route for the Peopling of the Americas*. [American Journal of Human Genetics 82 \(2008\), 583–592](#).

Nelson J. R. Fagundes, Ricardo Kanitz, Roberta Eckert, Ana C.S. Valls, Mauricio R. Bogo, Francisco M. Salzano, David Glenn Smith, Wilson A. Silva Jr., Marco A. Zago, Andrea K. Ribeiro-dos-Santos, Sidney E. B. Santos, Maria Luiza Petzl-Erler & Sandro L. Bonatto

It is well accepted that the Americas were the last continents reached by modern humans, most likely through Beringia. However, the precise time and mode of the colonization of the NewWorld remain hotly disputed issues. Native American populations exhibit almost exclusively five mitochondrial DNA (mtDNA) haplogroups (A–D and X). Haplogroups A–D are also frequent in Asia, suggesting a northeastern Asian origin of these lineages. However, the differential pattern of distribution and frequency of haplogroup X led some to suggest that it may represent an independent migration to the Americas. Here we show, by using 86 complete mitochondrial genomes, that all Native American haplogroups, including haplogroup X, were part of a single founding population, thereby refuting multiple migration models. A detailed demographic history of the mtDNA sequences estimated with a Bayesian coalescent method indicates a complex model for the peopling of the Americas, in which the initial differentiation from Asian populations ended with a moderate bottleneck in Beringia during the last glacial maximum (LGM), around  $\approx 23,000$  to  $\approx 19,000$  years ago. Toward the end of the LGM, a strong population expansion started  $\approx 18,000$  and finished  $\approx 15,000$  years ago. These results support a pre-Clovis occupation of the New World, suggesting a rapid settlement of the continent along a Pacific coastal route.

#### GRUHN 2005

Ruth Gruhn, *The Ignored Continent, South America in Models of Earliest American Prehistory*. In: ROBSON BONNICHSEN, BRADLEY T. LEPPER, DENNIS STANFORD & MICHAEL R. WATERS (Hrsg.), *Paleoamerican Origins, Beyond Clovis*. Peopling of the Americas ([College Station 2005](#)), 199–208.

The venerable Clovis-first model of the peopling of the Americas was testable: It could be disproven by evidence of archaeological sites older than Clovis, or contemporary with Clovis but significantly different in character. South American archaeological sites presented such evidence, but they were long ignored or discounted. The history of development and entrenchment of the Clovis-first model in North America was a strong contributing factor. This paper discusses the treatment of three early South American sites—Taima-taima, Tibitó, and Monte Verde—by supporters of the Clovis-first model. A review of other early South American sites demonstrates that by the time of the Clovis horizon in North America, all major environmental zones of the southern continent were already occupied by well-adapted populations maintaining diverse subsistence systems and distinctive technologies unrelated to Clovis. Evidence from South America has not only disproven the Clovis-first model; it shows that the standard North American evolutionary model is inappropriate for the southern continent, for the earliest complexes are Paleoarchaic in character, not Paleoindian. North American models may be confounded by South American data once again, if evidence for South American sites earlier than 20,000 yr B.P. is verified.

#### JACKSON 2007

Donald Jackson, César Méndez, Roxana Seguel, Antonio Maldonado & Gabriel Vargas, *Initial Occupation of the Pacific Coast of Chile during Late Pleistocene Times*. [Current Anthropology](#) **48** (2007), 725–731.

The record of the initial settlement of South America has significant geographical gaps, especially along the Pacific coast. The study of small sites with brief

occupation spans can open windows on high-resolution contexts in which associations and activities are clear. Through the use of a program designed to identify lacustrine Pleistocene environments in which the initial human populations would presumably have settled, Quebrada Santa Julia, a site attesting to human presence dating to 13,000 calibrated years BP, has recently been located on the semiarid coast of Chile. It is the only known Paleoindian site with fluted projectile points in unambiguous association with extinct megafauna on the Andean Pacific coast. It represents a small lakeside camp with a brief occupation span in which multiple activities, including the processing of prey transported from a nearby location, were conducted. The present of extralocal lithic raw materials argues for movements into the interior, as has been suggested for other early settlements in the Andean region. Notwithstanding its proximity to the littoral, the site has not yielded any evidence of the exploitation of marine resources.

#### JELINEK 1992

Arthur J. Jelinek, *Perspectives from the Old World on the habitation of the New*. [American Antiquity](#) **57** (1992), 345–347.

Despite the much briefer period of research and many fewer archaeologists involved, there is now clear and incontrovertible evidence of human occupation in Australia at a period significantly earlier than can be documented with comparable evidence from the New World. An explanation of the differences in the present record between these two regions that relies on an insufficient study of situations favorable to the preservation of earlier material in the New World seems inadequate in light of the total accumulated evidence.

#### LYNCH 1990

Thomas F. Lynch, *Glacial-age man in South America? A critical review*. [American Antiquity](#) **55** (1990), 12–36.

This paper is an attempt to place the dispute about early man in South America in historical context and to review the most convincing and important evidence that has been put forward. Essentially no skeletal remains either in North or South America – have survived recent scrutiny and direct dating by accelerator mass spectrometry (AMS) and small CO<sub>2</sub> counters. Only a handful of North American sites still are considered likely to be preClovis, but the concept of an earlier, generalized hunting-and-gathering adaptation remains popular. In South America the pre-Paleoindian sites of the 1960s and 1970s are reevaluated and found to present only weak or negative indications of early occupation. Recently discovered sites in Brazil and Chile are examined critically, and the evidence is questioned. The results of this survey and evaluation suggest that we still lack the absolutely certain case that would be necessary to support the hypothesis of glacial-age occupation. Moreover, the probability of demonstration is seen to decrease, rather than increase, as the Paleoindian horizon increasingly is defined with more certainty while only equivocal cases are marshalled for an Archaic-like pre-Paleoindian stage. In summarizing prehistory, archaeologists should depend more on unambiguous and replicated cases, rather than on regional exceptions. More interpretive caution is needed, especially where there are possibilities of mixture and secondary deposition. Natural processes often mimic cultural patterns, confusing the positive identification of informal hearths and simple artifacts.

#### MELGAR 2013

César Méndez Melgar, *Terminal Pleistocene / early Holocene <sup>14</sup>C dates from archaeological sites in Chile, Critical chronological issues for the*

*initial peopling of the region.* [Quaternary International 301 \(2013\), 60–73.](#)

QuatInt301-060-Supplement1.pdf

A review of  $^{14}\text{C}$  information for archaeological sites in Chile between 13,000 and 7000 BP assesses the consistency of information on the early settlement of the region. Results explore geographical distribution, contextual reliability, repeatability and cultural association of this assemblage of dates. Chronological trends are discussed through the use of averaged calibrated occupational events based on contextual and statistical data. The use of this database constitutes the framework for discussing critical issues such as the first consistent human presence, regional temporal peopling differences, the chronological data supporting consistent use of littoral environments, and the coexistence/interaction of extinct faunas and humans. Research biases and current unsolved questions are raised in order to formulate a future agenda for improving chronological data for the human occupation of the Pleistocene-Holocene transition in Chile.

#### MELTZER 1989

David J. Meltzer, *Why don't we know when the first people came to North America?* [American Antiquity 54 \(1989\), 471–490.](#)

The question of when the first people came to North America defies consensus. Data from an array of fields would seem to narrow the number and timing of migrations, but that evidence is at best circumstantial and cannot be used to constrain what is strictly an archaeological matter. Advocates of a pre-12,000 B.P. human population assert that their evidence is valid and is rejected by skeptics only because of deep-set historical biases. That assertion is not well-founded. If a bias exists, it is in the assumption that there were only three discrete migrations, the earliest of which was Clovis. The possibility that these migrations were not discrete episodes involving small founding populations, but instead may have been migratory dribbles spread over thousands of years, has implications for understanding the variation evident among modern descendant populations and the archaeological variability of Clovis. The possibility that there were early, pre-12,000 B.P. migrations that may have been wholly unrelated to Clovis and failed, may have equally important implications for why we don't know when the first people came to North America.

#### MELTZER 1997

David J. Meltzer et al., *On the Pleistocene antiquity of Monte Verde, southern Chile.* [American Antiquity 62 \(1997\), 659–663.](#)

David J. Meltzer, Donald K. Grayson, Gerardo Ardila, Alex W. Barker, Dena F. Dincauze, C. Vance Haynes, Francisco Mena, Lautaro Núñez and Dennis J. Stanford

The potential importance of the Monte Verde site for the peopling of the New World prompted a detailed examination of the collections from that locality, as well as a site visit in January 1997 by a group of Paleoindian specialists. It is the consensus of that group that the MV-II occupation at the site is both archaeological and 12,500 years old, as T Dillehay has argued. The status of the potentially even older material at the site (MV-I,  $\approx$ 33,000 B.P.) remains unresolved.

#### ORTLIEB 2011

Luc Ortlieb, Gabriel Vargas & Jean-François Saliège, *Marine radiocarbon reservoir effect along the northern Chile–southern Peru coast*



(14–24°S) throughout the Holocene. [Quaternary Research 75 \(2011\), 91–103.](#)

Through an extensive sampling and dating of pairs of associated shells and charcoal fragments combined with reanalysis of all the available previous data, we reconstruct the evolution throughout the Holocene of the regional marine radiocarbon reservoir effect (ΔR) values along the northern Chile–southern Peru area (14°–24°S). After elimination of the cases in which the terrestrial component yielded older ages than the marine shells to which they were associated, the study is based upon data from 47 pairs of associated marine and terrestrial material.

Our results suggest major changes in both the magnitude and variability range of ΔR during the whole Holocene Period: (1) between 10,400 and 6840 cal yr BP, high values (511±278 yr) probably result from a strengthened SE Pacific subtropical anticyclone and shoaling of equatorial subsurface waters during intensified upwelling events; (2) between 5180 and 1160 cal yr BP, lower values (226±98 yr) may reflect a major influence of subtropical water and diminished coastal upwelling processes; (3) during the last ≈thousand years, high values (between 355±105 and 253±207 yr) indicate an increased influence of 14C-depleted water masses and of ENSO. For the early twentieth century a ΔR value of 253±207 yr was calculated.

**Keywords:** Radiocarbon reservoir effect | Holocene | Paleooceanographic circulation | Upwelling | Southeastern Pacific | Peru | Chile

## Anthropologie

CRUCIANI 2011

Fulvio Cruciani, Beniamino Trombetta, Andrea Massaia, Giovanni Destro-Bisol, Daniele Sellitto & Rosaria Scozzari, *A Revised Root for the Human Y Chromosomal Phylogenetic Tree, The Origin of Patrilineal Diversity in Africa.* [American Journal of Human Genetics 88 \(2011\), 814–818.](#)

To shed light on the structure of the basal backbone of the human Y chromosome phylogeny, we sequenced about 200 kb of the male-specific region of the human Y chromosome (MSY) from each of seven Y chromosomes belonging to clades A1, A2, A3, and BT. We detected 146 biallelic variant sites through this analysis. We used these variants to construct a patrilineal tree, without taking into account any previously reported information regarding the phylogenetic relationships among the seven Y chromosomes here analyzed. There are several key changes at the basal nodes as compared with the most recent reference Y chromosome tree. A different position of the root was determined, with important implications for the origin of human Y chromosome diversity. An estimate of 142 KY was obtained for the coalescence time of the revised MSY tree, which is earlier than that obtained in previous studies and easier to reconcile with plausible scenarios of modern human origin. The number of deep branchings leading to African-specific clades has doubled, further strengthening the MSY-based evidence for a modern human origin in the African continent. An analysis of 2204 African DNA samples showed that the deepest clades of the revised MSY phylogeny are currently found in central and northwest Africa, opening new perspectives on early human presence in the continent.

FU 2013

Qiaomei Fu et al., *A Revised Timescale for Human Evolution Based on Ancient Mitochondrial Genomes.* [Current Biology 23 \(2013\), 553–559.](#)

Qiaomei Fu, Alissa Mittnik, Philip L.F. Johnson, Kirsten Bos, Martina Lari, Ruth Bollongino, Chengkai Sun, Liane Giemisch, Ralf Schmitz, Joachim Burger, Anna Maria Ronchitelli, Fabio Martini, Renata G. Cremonesi, Jiří Svoboda, Peter Bauer, David Caramelli, Sergi Castellano, David Reich, Svante Pääbo & Johannes Krause  
Background: Recent analyses of de novo DNA mutations in modern humans have suggested a nuclear substitution rate that is approximately half that of previous estimates based on fossil calibration. This result has led to suggestions that major events in human evolution occurred far earlier than previously thought.

Results: Here, we use mitochondrial genome sequences from ten securely dated ancient modern humans spanning 40,000 years as calibration points for the mitochondrial clock, thus yielding a direct estimate of the mitochondrial substitution rate. Our clock yields mitochondrial divergence times that are in agreement with earlier estimates based on calibration points derived from either fossils or archaeological material. In particular, our results imply a separation of non-Africans from the most closely related sub-Saharan African mitochondrial DNAs (haplogroup L3) that occurred less than 62–95 kya.

Conclusions: Though single loci like mitochondrial DNA (mtDNA) can only provide biased estimates of population divergence times, they can provide valid upper bounds. Our results exclude most of the older dates for African and nonAfrican population divergences recently suggested by de novo mutation rate estimates in the nuclear genome.

#### KOLB 2013

Aaron W. Kolb, Cécile Ané & Curtis R. Brandt, *Using HSV-1 Genome Phylogenetics to Track Past Human Migrations*. [PLoS ONE 8 \(2013\), e76267](https://doi.org/10.1371/journal.pone.0076267). DOI:10.1371/journal.pone.0076267.

[pone08-e76267-Supplement1.png](#), [pone08-e76267-Supplement2.png](#)

We compared 31 complete and nearly complete globally derived HSV-1 genomic sequences using HSV-2 HG52 as an outgroup to investigate their phylogenetic relationships and look for evidence of recombination. The sequences were retrieved from NCBI and were then aligned using Clustal W. The generation of a maximum likelihood tree resulted in a six clade structure that corresponded with the timing and routes of past human migration. The East African derived viruses contained the greatest amount of genetic diversity and formed four of the six clades. The East Asian and European/North American derived viruses formed separate clades. HSV-1 strains E07, E22 and E03 were highly divergent and may each represent an individual clade. Possible recombination was analyzed by partitioning the alignment into 5 kb segments, performing individual phylogenetic analysis on each partition and generating a phylogenetic network from the results. However most evidence for recombination spread at the base of the tree suggesting that recombination did not significantly disrupt the clade structure. Examination of previous estimates of HSV-1 mutation rates in conjunction with the phylogenetic data presented here, suggests that the substitution rate for HSV-1 is approximately  $1.38 \times 10^{-7}$  subs/site/year. In conclusion, this study expands the previously described HSV-1 three clade phylogenetic structures to a minimum of six and shows that the clade structure also mirrors global human migrations. Given that HSV-1 has co-evolved with its host, sequencing HSV-1 isolated from various populations could serve as a surrogate biomarker to study human population structure and migration patterns.

#### MARGVELASHVILI 2013

Ann Margvelashvili, Christoph P.E. Zollikofer, David Lordkipanidze, Timo Peltomäki & Marcia S. Ponce de León, *Tooth wear and den-*

*toalveolar remodeling are key factors of morphological variation in the Dmanisi mandibles.* [PNAS 110 \(2013\), 17278–17283.](#)

The Plio-Pleistocene hominin sample from Dmanisi (Georgia), dated to 1.77 million years ago, is unique in offering detailed insights into patterns of morphological variation within a paleodeme of early Homo. Cranial and dentoalveolar morphologies exhibit a high degree of diversity, but the causes of variation are still relatively unexplored. Here we show that wear-related dentoalveolar remodeling is one of the principal mechanisms causing mandibular shape variation in fossil Homo and in modern human hunter-gatherer populations. We identify a consistent pattern of mandibular morphological alteration, suggesting that dental wear and compensatory remodeling mechanisms remained fairly constant throughout the evolution of the genus Homo. With increasing occlusal and interproximal tooth wear, the teeth continue to erupt, the posterior dentition tends to drift in a mesial direction, and the front teeth become more upright. The resulting changes in dentognathic size and shape are substantial and need to be taken into account in comparative taxonomic analyses of isolated hominin mandibles. Our data further show that excessive tooth wear eventually leads to a breakdown of the normal remodeling mechanisms, resulting in dentognathic pathologies, tooth loss, and loss of masticatory function. Complete breakdown of dentognathic homeostasis, however, is unlikely to have limited the life span of early Homo because this effect was likely mediated by the preparation of soft foods.

aging | compensatory mechanisms | toothpick | local periodontitis | early Pleistocene Homo

WALKER 2010

Alan Walker & Chris Stringer, *The first four million years of human evolution.* [Phil. Trans. Royal Society B 365 \(2010\), 3265–3266.](#)

## **Bibel**

KÜGLER 1997

Joachim Kügler, *Pharao und Christus? Religionsgeschichtliche Untersuchung zur Frage einer Verbindung zwischen altägyptischer Königstheologie und neutestamentlicher Christologie im Lukasevangelium.* Habilitationsschrift, Rheinische Friedrich-Wilhelms-Universität Bonn ([Bonn 1997](#)).

## **Biologie**

STORCH 2013

Volker Storch, Ulrich Welsch & Michael Wink, *Evolutionsbiologie.* ([Berlin 2013](#)).

## **Datierung**

BATES 2013

Martin Bates, Matthew Pope, Andrew Shaw, Beccy Scott & Jean-Luc Schwenninger, *Late Neanderthal occupation in North-West Europe, Re-discovery, investigation and dating of a last glacial sediment sequence*

at the site of *La Cotte de Saint Brelade, Jersey*. [Journal of Quaternary Science](#) **28** (2013), 647–652.

[jqs28-647-Supplement1.pdf](#), [jqs28-647-Supplement2.pdf](#), [jqs28-647-Supplement3.pdf](#)

In 2011, a programme of field research was undertaken to effect the stabilization of an unstable section in the West Ravine at the key Neanderthal occupation site of La Cotte de St Brelade on the Channel Island of Jersey. As part of this essential remedial work the threatened section was analysed to characterize its archaeological and palaeoenvironmental potential as well provide optically stimulated luminescence (OSL) dates. The work determined, through two concordant OSL dating programmes, that the section formed part of an extensive sequence of sedimentation spanning >105 to <48 ka. Furthermore, reanalysis of the archive determined that the sediment sequence examined contained the stratigraphic equivalent of deposits lying below those that have previously produced Neanderthal fossils. Through our work, we can now constrain these younger sediments to being younger than 48 ka. The combined results suggest that this sequence now represents the recovery of an extensive dataset, thought lost to science through complete excavation, which holds the potential to throw light on the disappearance of Neanderthal populations from the Atlantic-edge outpost on the north-west frontier of their world.

Keywords: Jersey; La Cotte de Saint Brelade; Neanderthal; OSL dating.

## Grundlagen

### WENDT 2010

Karl Peter Wendt, Johanna Hilpert & Andreas Zimmermann, *Landchaftsarchäologie III: Untersuchungen zur Bevölkerungsdichte der vorrömischen Eisenzeit, der Merowingerzeit und der späten vorindustriellen Neuzeit an Mittel- und Niederrhein*. [Berichte der Römisch-Germanischen Kommission](#) **91** (2010), 217–338.

Mit Beiträgen von Sonja Ickler, Hans Nortmann, Bernd Päßgen, Frank Siegmund und Petra Tutlies

In this and two previous articles we have produced regionally differentiated figures for the population density of the Rhineland for an area of some 30,000 km<sup>2</sup> stretching approximately from mainz to the dutch border. the following periods were considered: the linear Pottery culture (Zimmermann u. a. 2004), the iron age (in this article), the Roman empire (Wendt 2008), the merovingian period and the years around ad 1800 (both in this article).

to this end a standardised combination of methods for “upscaling” was developed that took into account archaeological features (households or cemeteries) and a statistical description of the Prussian Rhineland on the microscale, as well as a large-scale archaeological distribution maps and the sites of historically recorded places. analysis of the accuracy limits resulting from the methods and sources used indicate that the greatest degree of uncertainty is at the level of households (persons per building) and cemeteries (deviation from a stationary population). on the other hand, incomplete distribution maps and method-induced blurring in their geostatistical analysis were less significant (Table 36). in spite of these errors of estimation, the accuracy of the values arrived at lies within the range demanded in the “World atlas of Population history” (mcevedy / Jones 1978). for example, the population density for the early neolithic linear Pottery culture is  $0.6 \pm 0.1$  persons / km<sup>2</sup>, and for the Roman empire  $14.4 \pm 3.5$  persons / km<sup>2</sup> (Table 37). While the latter value corresponds closely to the estimates made by ancient historians (scheidel u. a. 2007), the results for earlier periods are much lower than previous

figures (Fig. 26). on the one hand, this is due to the fact that, for example, during the iron age areas such as the lower Rhine and the highlands, which are under consideration here, had a much lower population density than areas with loess soils. on the other hand, when gaps in the distribution maps were scaled upwards they became more significant, even when they were areas with favourable environments. in some individual cases it can be demonstrated that, during the linear Pottery culture for example, between areas with settlement concentrations there are areas with a low population density which were intensively used in other periods. in such cases deficiencies in the archaeological record cannot be the cause of gaps in the find distribution.

a comparison with other published values for population density reveals that a distinction must be made between “global” and “local” densities. While global densities include unpopulated regions and areas which were poorly exploited, values for local density only refer to areas of settlement.

seen against the background of the values arrived at, clearly it was not population pressure that resulted in innovation or cultural evolution in pre-state societies. for long periods of prehistory the instability that is clearly visible in the archaeological record is more likely to have been due to too low a population density. important developments in agricultural technology such as the introduction of dairy farming in individual central european settlements in the 5th millennium bc, or the widespread use of the plough from the second half of the 4th millennium bc do not seem to have had any recognisable effect on the density of the population.

**Keywords:** Middle Rhine, Lower Rhine, Early Iron Age, Late Iron Age, Merovingian period, modern age, diachronic comparison, landscape archaeology, cultural change / tradition / crisis, reconstruction, graves, settlements, statistics, GIS, determination of estimation errors, demography

**Schlagwörter:** Mittelrhein, Niederrhein, Ältere Eisenzeit, Jüngere Eisenzeit, Merowingerzeit, Neuzeit, diachroner Vergleich, Landschaftsarchäologie, kultureller Wandel / Tradition / Krise, Rekonstruktion, Grabbefunde, Siedlungen, Statistik, GIS, Schätzfehlerbestimmung, Demographie

## ZIMMERMANN 2009

A. Zimmermann, K. P. Wendt, T. Frank & J. Hilpert, *Landscape Archaeology in Central Europe*. [Proceedings of the Prehistoric Society](#) **75** (2009), 1–53.

Estimations of population density, which consider regional variability, are an important key variable in archaeology as they have consequences not only for the environmental but also for the economical and social domains. In this paper, a ten-step procedure of a consistent group of methods is described which deals with the data required for estimations of population density at different scale levels (from excavation to large-scale distribution maps). For distribution maps, a method is presented by which densities of sites are displayed using optimal isolines. These demarcate so called ‘settlement areas’ at scales of between 1:25,000 and 1:2.5 million. Our knowledge of the density of households from key areas with the most complete archaeological records is upscaled for the regions within these isolines. The results of this procedure are estimations of population density for the early Neolithic (Bandkeramik, 51st century BC) and the Roman period (2nd century AD) for regions with some 10,000 km<sup>2</sup>.

A simple statistical/graphical method is developed to analyse the relationship between settlement areas, soils, and precipitation. Taking into account the aspects of preservation of sites and the intensity of archaeological observations, an analysis of patterns of land use shows that in prehistory not all areas suitable for use were in fact incorporated into settlement areas. For prehistory, the idea of a most opti-

mised use of land up to its carrying capacity (as it has been proposed for at least 50 years) can be falsified for specific areas. A large number of empty regions with good ecological conditions but lacking in settlement activity can be discussed as resulting from culture historical processes. As an example, the separation of areas inhabited by groups of different identities is discussed. The amount of used space (in terms of ‘settlement area’) however, increases from the early Neolithic to the 4th century BC from 5 % to more than 40 % . The increase between the Neolithic and the Iron Age is understood in terms of technological developments in farming systems. The percentage of areas with suitable conditions actually utilised between the Bandkeramik and Iron Age increases from 31.1 % to 67.5 % in the area covered by the *Geschichtlicher Atlas der Rheinlande*, and is much higher still in the Roman period (84.3 %). State societies seem to use the land more efficiently compared to non-state systems. This is becoming even clearer on consideration of the intensity of human impact.

Large-scale distribution maps dividing the Neolithic in five periods were analysed. In each of the periods large settlement areas seem to be characterised either by the development of specific cultural innovations or by exchange of a specific raw material. In the course of time, the size of settlement areas in a specific region fluctuates markedly. It is most plausible to assume that this is due to a remarkable mobility of seemingly sedentary populations. Individual families recombine to new socio-cultural units every few hundred years.

The relationship between size of settlement areas and the number of households can be used to develop ideas relating to the flow of exchange goods. An example for the Bandkeramik considering the Rijckholt-Flint is presented. The combination of the number of households and the percentage of this raw material in the specific settlement areas visualises the amount needed and the amount transferred to other settlement areas in the neighbourhood. A future economical archaeology could use this information to develop ideas relating to the importance of the economic sector, ie, ‘procurement of flint’ in relation to the ‘production of foodstuffs’ according to the time required for each group of activities.

In the last section, the relationship between settlement areas and human impact is discussed. For the periods of subsistence economy, it is argued that the size of the population and its farming system are the two most important factors. For example, in Bandkeramik settlement areas, approximately 2 % of the forest covering the landscape was cut down; in Roman times, and depending on the intensity of farming, this reaches magnitudes of between 20 % and 50 %. Although some of the methods and arguments used in this paper may be exchanged for better ones in the future, it is already apparent that a consistent system of methods is essential to transfer results of analyses on a lower scale level as input on a higher level and vice versa.

## Judentum

OSWALD 1963

Nico Oswald, *Grundgedanken zu einer pharisäisch-rabbinischen Theologie*. *Kairos* 5 (1963), 40–59.

## Kultur

ANDELKOVIĆ 2011

Branislav Anđelković, *Factors of state formation in protodynastic Egypt*. In: RENÉE F. FRIEDMAN & PETER N. FISKE (Hrsg.),

*Egypt at its origins 3, Proc. 3rd Int. Conf. "Origin of the State. Pre-dynastic and Early Dynastic Egypt" London, 27th Jul. – 1st Aug. 2008.* *Orientalia Lovaniensia Analecta* 205 (Leuven 2011), 1219–1228.

State formation in Protodynastic Egypt seems to have been the synergic and cumulative result of a broad range of elements operating together. However, those mutually interacting components—the ones of which we are aware, along with those still obscure — are unlikely to have affected the state formation process all at the same time, in the same way or in equal proportion. Rather, the formative environment should be perceived as a complex matrix of factors, each of which may have been of crucial importance for the process at a certain point and perhaps again at some following point. Although we can hardly encompass all of them, it seems possible, judging from the data in hand, to distinguish a unique conjuncture of the passive and active factors. Nevertheless, only the factor(s) that directly brought the state formation process to its successful completion should be considered predominant. Among the factors comprising the natural setting are: the annual fertilising inundation and the high solar insolation level, both of which created the ideal conditions for fruitful agriculture; the subsistence-friendly combination of the river, floodplain and low desert ecosystems, including economically favourable biodiversity; and the stimulatory possibilities of low-cost riverine transport. Although these passive factors are present to some degree along the entire 3000 km stretch of the Nile from Khartoum to the Mediterranean, notably the only area where a state was conceived extends to the north and south of the Qena bend, in the Naqada heartland. In other words, it seems that the driving forces, i.e., the predominant factors in this particular case, should be seen in certain active features of the Naqada culture itself, particularly in the domain of social, ideological, religious, symbolic and mythological values, and in how this value system was organised, with sacred leadership as an axis of social configuration.

## Neolithikum

ZIMMERMANN 2012

Andreas Zimmermann, *Hypothesen zur Entstehung des Neolithikums im Nahen Osten – ein integratives Modell der Entwicklungsprozesse*. In: ASTRID STOBBE & URSULA TEGTMEIER (Hrsg.), *Verzweigungen, Eine Würdigung für A. J. Kalis und J. Meurers-Balke*. Frankfurter Archäologische Schriften 18 (Bonn 2012), 371–375.

ZIMMERMANN 2012

Andreas Zimmermann, *Das Hofplatzmodell – Entwicklung, Probleme, Perspektiven*. *Arbeits- und Forschungsberichte zur sächsischen Bodendenkmalpflege* (2012), Beiheft 25, 11–19.

## Religion

MAIER 1963

Johann Maier, *Das Gefährdungsmotiv bei der Himmelsreise in der jüdischen Apokalyptik und „Gnosis“*. *Kairos* 5 (1963), 18–40.

NARR 1963

Karl J. Narr, *Wege zum Verständnis prähistorischer Religionsformen*. *Kairos* 5 (1963), 179–188.

## Story or Book

### FARMELO 2013

Graham Farmelo, *Packet man*. [nature 502 \(2013\), 300–301](#).

Graham Farmelo delights in a study of Albert Einstein’s under-appreciated contributions to quantum theory.

Einstein and the Quantum: The Quest of the Valiant Swabian. A. Douglas Stone. Princeton University Press: 2013.

In 1905, the 26-year-old physics wizard radically suggested that the energy of electromagnetic radiation is transferred in the discrete amounts that Planck called quanta. For physicists of the day, long familiar with James Clerk Maxwell’s wave description of light, Einstein’s notion was beyond heretical. Few leading theoreticians took it seriously, least of all Planck.

Yet, more than any other scientist, Einstein ran with the quantum idea. Applying it to the vibrational energies of atoms, he used it to predict that the specific heats of solids should vanish as the temperature is lowered towards absolute zero. Quoting an early statement of Einstein’s about atomic energy, Stone adds with characteristic pith that energy quantization “is not a mathematical trick; it is the way of the atomic world. Get used to it.”

### TRAULSEN 2013

Arne Traulsen, *From Matter to Self-Organizing Life*. [science 342 \(2013\), 39–40](#).

From Strange Simplicity to Complex Familiarity. A Treatise on Matter, Information, Life, and Thought. by Manfred Eigen. Oxford University Press, Oxford, 2013. 754 pp. \$225, £125. ISBN 9780198570219.

Some of the questions are of the kind that kids would ask: “How many trees make a wood?” or “How large is zero?” But most kids will not understand the answers that Eigen offers. He supposes that the reader has a solid general education in the natural sciences, tacitly assuming familiarity with concepts from statistical mechanics, quantum mechanics, biochemistry, and genetics. But after technically demanding parts, the author always comes back to basic principles, allowing even readers having a less solid background to easily follow the main line of thought.