

Literatur

Aktuell

BÖHME 2012

Madelaine Böhme, Manuela Aiglstorfer, Dieter Uhl & Ottmar Kullmer, *The Antiquity of the Rhine River: Stratigraphic Coverage of the Dinotheriensande (Eppelsheim Formation) of the Mainz Basin (Germany)*. [PLoS ONE 7 \(2012\), e36817](#). DOI:10.1371/journal.pone.0036817.

Background: Mammalian fossils from the Eppelsheim Formation (Dinotheriensande) have been a benchmark for Neogene vertebrate palaeontology since 200 years. Worldwide famous sites like Eppelsheim serve as key localities for biochronologic, palaeobiologic, environmental, and mammal community studies. So far the formation is considered to be of early Late Miocene age (≈ 9.5 Ma, Vallesian), representing the oldest sediments of the Rhine River. The stratigraphic unity of the formation and of its fossil content was disputed at times, but persists unresolved.

Principal Findings: Here we investigate a new fossil sample from Sprendlingen, composed by over 300 mammalian specimens and silicified wood. The mammals comprise entirely Middle Miocene species, like cervids *Dicrocerus elegans*, *Paradicrocerus elegantulus*, and deinotheres *Deinotherium bavaricum* and *D. levius*. A stratigraphic evaluation of Miocene Central European deer and deinotheres species proof the stratigraphic inhomogeneity of the sample, and suggest late Middle Miocene (≈ 12.5 Ma) reworking of early Middle Miocene (≈ 15 Ma) sediments. This results agree with taxonomic and palaeoclimatic analysis of plant fossils from above and within the mammalian assemblage. Based on the new fossil sample and published data three biochronologic levels within the Dinotheriensand fauna can be differentiated, corresponding to early Middle Miocene (late Orleanian to early Astaracian), late Middle Miocene (late Astaracian), and early Late Miocene (Vallesian) ages.

Conclusions/Significance: This study documents complex faunal mixing of classical Dinotheriensand fauna, covering at least six million years, during a time of low subsidence in the Mainz Basin and shifts back the origination of the Rhine River by some five million years. Our results have severe implications for biostratigraphy and palaeobiology of the Middle to Late Miocene. They suggest that turnover events may be obliterated and challenge the proposed 'supersaturated' biodiversity, caused by Middle Miocene superstites, of Vallesian ecosystems in Central Europe.

BORNEMAN 2012

John Borneman, *Incest, the Child, and the Despotical Father*. [Current Anthropology 53 \(2012\), 181–203](#).

Based on ethnographic research in Berlin, this paper examines two paradigmatic cases in which real incest is brought into the penumbra of law and subsumed into an imaginary complex superimposed on sexual abuse. It uses them to theorize at a higher level of abstraction about the deployment of myth by the unconscious, the relation between taboo and law, male and female attachments to the child, gender conflict, and changes in the position of the father in the symbolic order of the West. One case focuses on how a child victim translates what had happened into the therapeutic and legal languages of sexual abuse, the other on the father's evolving apprehension of his deed in the course of therapy. I argue that (1) the incest taboo increasingly regulates lineal rather than lateral relations between kin; (2) the imaginary complex construes male sexuality as a security

threat to children, resulting in a negative identification with and of male difference, with serious consequences for the family, the heterosexual couple, and the mother-child bond; and (3) the erosion of the incest taboo, and of the authority of the father who was its guarantor, opens up alternative modalities to regulate relations between generations and genders.

COOLIDGE 2012

Frederick L. Coolidge & Karenleigh A. Overmann, *Numerosity, Abstraction, and the Emergence of Symbolic Thinking*. *Current Anthropology* **53** (2012), 204–225.

In this paper we tentatively propose that one of the feral cognitive bases for modern symbolic thinking may be numerosity, that is, the ability to appreciate and understand numbers. We proffer that numerosity appears to be an inherently abstractive process, which is supported by numerous human infant and monkey studies. We also review studies that demonstrate that the neurological substrate for numerosity is primarily the intraparietal sulcus of the parietal lobes, the angular and supramarginal gyri in the inferior parietal lobes, and areas of the prefrontal cortex. We also speculate that the lower level of abstraction involved in numerosity may serve as a basis for higherlevel symbolic thinking, such as number and letter symbolism and sequencing. We further speculate that these two levels of abstraction may give rise to highly sophisticated characteristics of modern human language, such as analogizing and metaphorizing.

GIBBONS 2012

Ann Gibbons, *For Early Hominins in Africa, Many Ways To Take a Walk*. *science* **336** (2012), 538–539.

Until recently, many thought that upright walking—a defining trait of being a hominin—evolved step by step in one lineage relatively quickly, perhaps just before the emergence of *Au. afarensis*—the species of the famous fossil Lucy—about 3.6 million years ago. But the discovery of older upright walkers, including the 4.4-million-year-old *Ardipithecus ramidus* and the 6-million-year old *Orrorin tugenensis*, have pushed back the origins of bipedalism to 6 million years ago.

This spring, researchers unveiled the more primitive foot of a still-unnamed species of *Australopithecus* from Burtele, near Hadar, Lucy’s home in Ethiopia. That showed that at least two kinds of hominins walked upright in different ways at the same time 4 million to 3 million years ago.

In a talk, paleoanthropologist Yohannes Haile-Selassie of the Cleveland Museum of Natural History in Ohio showed how the new foot shared features such as an opposable big toe with older *Ar. ramidus*, which suggests that both hominins still spent considerable time in trees. The foot also shared a key trait (the shape of a toe bone) with *Au. africanus*, which lived about 2 million years ago in South Africa. Neither of those features is found in *Au. afarensis*, suggesting that Lucy’s species cannot be the direct ancestor of *Au. africanus*. That means that a second hominin lineage, with a different way of walking, must have led to *Au. africanus*, Haile-Selassie notes. (Lucy’s species is still the leading candidate for ancestor to early *Homo*.)

How the Modern Body Shaped Up

One of the most significant findings is a dramatic drop in strength in leg bones. Leg bending strength, or resistance to fracture, declined by 25% to 33% from 27,000 years ago to 1900 C.E., as shown by the crosssectional dimensions of the upper and lower leg bones of 1834 men and 786 women. One trend through time is that the right arm lost much of its asymmetric larger size compared to the left arm, perhaps due to fewer strongly lateralized activities such as spear throwing.

HORRY 2012

Ruth Horry, Matthew A. Palmer, Michelle L. Sexton & Neil Brewer, *Memory conformity for confidently recognized items: The power of social influence on memory reports*. [Journal of Experimental Social Psychology 48 \(2012\), 783–786](#).

Memory conformity occurs when one person's memory report influences another's. Memory conformity is more likely to occur when the information comes from a credible source, and when internal evidence is weak. Here, we investigate whether there are situational variations in how heavily participants weigh internal cues to accuracy when confronted with conflicting information from a partner. The results show that even confidently held memories are subject to influence from external sources, and that social influence is exaggerated when the source is seen to be highly credible.

Keywords: Memory conformity | Confidence | Face recognition | In-group bias | Own-race bias

JACK 2012

Rachael E. Jack, Oliver G. B. Garrod, Hui Yu, Roberto Caldara & Philippe G. Schyns, *Facial expressions of emotion are not culturally universal*. [PNAS 109 \(2012\), 7241–7244](#).

[pnas109-07241-Supplement1.avi](#), [pnas109-07241-Supplement2.avi](#)

Since Darwin's seminal works, the universality of facial expressions of emotion has remained one of the longest standing debates in the biological and social sciences. Briefly stated, the universality hypothesis claims that all humans communicate six basic internal emotional states (happy, surprise, fear, disgust, anger, and sad) using the same facial movements by virtue of their biological and evolutionary origins [Susskind JM, et al. (2008) *Nat Neurosci* 11:843-850]. Here, we refute this assumed universality. Using a unique computer graphics platform that combines generative grammars [Chomsky N (1965) MIT Press, Cambridge, MA] with visual perception, we accessed the mind's eye of 30 Western and Eastern culture individuals and reconstructed their mental representations of the six basic facial expressions of emotion. Crosscultural comparisons of the mental representations challenge universality on two separate counts. First, whereas Westerners represent each of the six basic emotions with a distinct set of facial movements common to the group, Easterners do not. Second, Easterners represent emotional intensity with distinctive dynamic eye activity. By refuting the long-standing universality hypothesis, our data highlight the powerful influence of culture on shaping basic behaviors once considered biologically hardwired. Consequently, our data open a unique nature-nurture debate across broad fields from evolutionary psychology and social neuroscience to social networking via digital avatars.

modeling | reverse correlation | categorical perception | top-down processing | cultural specificity

KEYSAR 2012

Boaz Keysar, Sayuri L. Hayakawa & Sun Gyu An, *The Foreign-Language Effect: Thinking in a Foreign Tongue Reduces Decision Biases*. [Psychological Science \(2012\) preprint, 1–8](#). DOI:10.1177/0956797611432178.

Would you make the same decisions in a foreign language as you would in your native tongue? It may be intuitive that people would make the same choices regardless of the language they are using, or that the difficulty of using a foreign language would make decisions less systematic. We discovered, however, that the opposite is true: Using a foreign language reduces decision-making biases. Four experiments show that the framing effect disappears when choices are presented in a foreign tongue. Whereas people were

risk averse for gains and risk seeking for losses when choices were presented in their native tongue, they were not influenced by this framing manipulation in a foreign language. Two additional experiments show that using a foreign language reduces loss aversion, increasing the acceptance of both hypothetical and real bets with positive expected value. We propose that these effects arise because a foreign language provides greater cognitive and emotional distance than a native tongue does.

Keywords: bilingualism, decision making, emotions, foreign-language learning, language

KVAVILASHVILI 2009

Lia Kvavilashvili, Jennifer Mirani, Simone Schlagman, Kerry Foley & Diana E. Kornbrot, *Consistency of flashbulb memories of September 11 over long delays: Implications for consolidation and wrong time slice hypotheses*. [Journal of Memory and Language](#) **61** (2009), 556–572.

The consistency of flashbulb memories over long delays provides a test of theories of memory for highly emotional events. This study used September 11, 2001 as the target event, with test-retest delays of 2 and 3 years. The nature and consistency of flashbulb memories were examined as a function of delay between the target event and an initial test (1-2 days or 10-11 days), and the number of initial tests (1 or 2) in 124 adults from the general population. Despite a reliable drop in consistency over the long delay periods, mean consistency scores were fairly high and the number of memories classed as ‘major distortions’ was remarkably low in both 2003 (9%) and 2004 (7%). The results concerning memory fluctuations across the re-tests and the qualitative analysis of ‘major distortions’ are consistent with the wrong time slice hypothesis which explains the development of distortions by hearing the news from multiple sources on the day of the flashbulb event [Neisser, U., & Harsch, N. (1992). Phantom flashbulbs: False recollections of hearing the news about Challenger. In: E. Winograd, & U. Neisser (Eds.), *Affect and accuracy in recall: Studies of “flashbulb memories”* (pp. 9-31). Cambridge: Cambridge University Press]. However, no support was obtained for the consolidation hypothesis [Winningham, R. G., Hyman, I. E., & Dinnel, D. L. (2000). Flashbulb memories? The effects of when the initial memory report was obtained. *Memory*, 8, 209-216]: memories of participants who were initially tested 10-11 days after September 11 were not more consistent than memories of participants tested 1-2 days after the event. In addition, the number of initial tests in September 2001 (one or two) and self-reported rehearsal did not have any beneficial effects on consistency. Together, these findings indicate that flashbulb memories may be formed automatically and consolidated fairly soon after an emotional event.

Keywords: Flashbulb memories | September 11 | Emotional memories | Consolidation hypothesis | Wrong time slice hypothesis

LEFEBVRE 2012

Philippe Lefebvre & Bart Staels, *Naturally improving insulin resistance with amorfrutins*. [PNAS](#) **109** (2012), 7136–7137.

However, the therapeutic armamentarium is relatively limited (4), consisting of drugs, in addition to insulin, including (i) α -glucosidase inhibitors, which decrease glucose absorption; (ii) metformin, which decreases hepatic glucose output; (iii) insulin secretagogues, such as sulfonylureas or glinides, which increase insulin secretion; (v) dipeptidyl peptidase 4, inhibitors, which stabilize the incretin GLP1; and (vi) glitazones [thiazolidinediones (TZDs)], which are insulin sensitizers that activate the nuclear receptor peroxisome proliferator-activated receptor (PPAR)- γ . This latter class, although unique because of their insulin-sensitizing properties, has been fraught with side effects, resulting in the recommendation of restricted use or even, in certain countries, retraction from the market. However, there are no therapeutic alternatives to this class of insulin sensitizers.

In PNAS, Weidner et al. report on the identification of amorfrutins, low-abundance natural products found in certain legumes, as potent PPAR γ ligands with antidiabetic action seemingly devoid of the side effects associated with TZD use (5).

LEV-ARI 2010

Shiri Lev-Ari & Boaz Keysar, *Why don't we believe non-native speakers? The influence of accent on credibility*. *Journal of Experimental Social Psychology* **46** (2010), 1093–1096.

Non-native speech is harder to understand than native speech. We demonstrate that this “processing difficulty” causes non-native speakers to sound less credible. People judged trivia statements such as “Ants don't sleep” as less true when spoken by a non-native than a native speaker. When people were made aware of the source of their difficulty they were able to correct when the accent was mild but not when it was heavy. This effect was not due to stereotypes of prejudice against foreigners because it occurred even though speakers were merely reciting statements provided by a native speaker. Such reduction of credibility may have an insidious impact on millions of people, who routinely communicate in a language which is not their native tongue.

Keywords: Foreign accent | Fluency | Attribution | Credibility

RUFFLE 2012

Bradley J. Ruffle & Ze'ev Shtudiner, *Are Good-Looking People More Employable?* *unknown 2012 preprint2*, 1–41. <<http://www.bgu.ac.il/~bradley/>>.

We investigate the role of physical attractiveness in the hiring process. We sent 5312 CVs in pairs to 2656 advertised job openings. In each pair, one CV was without a picture while the second, otherwise almost identical CV contained a picture of either an attractive male/female or a plain-looking male/female. Employer callbacks to attractive men are significantly higher than to men with no picture and to plain-looking men, nearly doubling the latter group. Strikingly, attractive women do not enjoy the same beauty premium. In fact, women with no picture have a significantly higher rate of callbacks than attractive or plain-looking women. We explore a number of explanations and provide evidence that female jealousy of attractive women in the workplace and the negative perception of women (but not men) who include pictures of themselves on their CVs are the primary reasons for the punishment of attractive women.

Keywords: beauty, discrimination, experimental economics.

TALARICO 2003

Jennifer M. Talarico & David C. Rubin, *Confidence, Not Consistency, Characterizes Flashbulb Memories*. *Psychological Science* **14** (2003), 455–461.

On September 12, 2001, 54 Duke students recorded their memory of first hearing about the terrorist attacks of September 11 and of a recent everyday event. They were tested again either 1, 6, or 32 weeks later. Consistency for the flashbulb and everyday memories did not differ, in both cases declining over time. However, ratings of vividness, recollection, and belief in the accuracy of memory declined only for everyday memories. Initial visceral emotion ratings correlated with later belief in accuracy, but not consistency, for flashbulb memories. Initial visceral emotion ratings predicted later posttraumatic stress disorder symptoms. Flashbulb memories are not special in their accuracy, as previously claimed, but only in their perceived accuracy.

WEIDNER 2012

Christopher Weidner et al., *Amorfrutins are potent antidiabetic dietary natural products*. *PNAS* **109** (2012), 7257–7262.

Christopher Weidner, Jens C. de Groot, Aman Prasad, Anja Freiwald, Claudia Quedenau, Magdalena Kliem, Annabell Witzke, Vitam Kodelja, Chung-Ting Han, Sascha Giegold, Matthias Baumann, Bert Klebl, Karsten Siems, Lutz Müller-Kuhrt, Annette Schürmann, Rita Schüler, Andreas F. H. Pfeiffer, Frank C. Schroeder, Konrad Büssow and Sascha Sauer

Given worldwide increases in the incidence of obesity and type 2 diabetes, new strategies for preventing and treating metabolic diseases are needed. The nuclear receptor PPAR γ (peroxisome proliferator-activated receptor gamma) plays a central role in lipid and glucose metabolism; however, current PPAR γ -targeting drugs are characterized by undesirable side effects. Natural products from edible biomaterial provide a structurally diverse resource to alleviate complex disorders via tailored nutritional intervention. We identified a family of natural products, the amorfrutins, from edible parts of two legumes, *Glycyrrhiza foetida* and *Amorpha fruticosa*, as structurally new and powerful antidiabetics with unprecedented effects for a dietary molecule. Amorfrutins bind to and activate PPAR γ , which results in selective gene expression and physiological profiles markedly different from activation by current synthetic PPAR γ drugs. In diet-induced obese and db/db mice, amorfrutin treatment strongly improves insulin resistance and other metabolic and inflammatory parameters without concomitant increase of fat storage or other unwanted side effects such as hepatotoxicity. These results show that selective PPAR γ -activation by diet-derived ligands may constitute a promising approach to combat metabolic disease.

nuclear receptors | nutrition | compound screening | organic synthesis | x-ray structure

Anthropologie

BALTER 2012

Michael Balter, *New Light on Revolutions That Weren't*. [science](#) **336** (2012), 530–531.

Humans were getting smart about how to hunt wild animals much earlier than previously known, according to a talk by archaeologist Jayne Wilkins of the University of Toronto in Canada. Wilkins, Benjamin Schoville of Arizona State University (ASU), Tempe, and Kyle Brown of the University of Cape Town in South Africa analyzed stone points from the site of Kathu Pan 1 (KP1); the tools came from a level dated by two relatively new dating techniques to about 500,000 years ago.

Archaeologists have considered two primary uses for stone points: as knives to cut animal flesh and plants, a function that dates to the earliest days of hominin evolution; or as weapons to hunt animals, probably hafted to long wooden handles and used as spears, a behavior thought to date to the beginning of the Middle Stone Age (MSA), about 300,000 years ago. During the MSA, hominin stone tools shifted from large, symmetrical hand axes to smaller and more sophisticated blades, which may reflect the beginnings of modern behavior.

LORETO 2012

Vittorio Loreto, Animesh Mukherjee & Francesca Tria, *On the origin of the hierarchy of color names*. [PNAS](#) **109** (2012), 6819–6824.

One of the fundamental problems in cognitive science is how humans categorize the visible color spectrum. The empirical evidence of the existence of universal or recurrent patterns in color naming across cultures is paralleled by the observation that color names begin to be used by individual cultures in a relatively fixed order. The origin of this hierarchy is largely unexplained. Here we resort to multiagent simulations, where a population of individuals, subject to a simple perceptual constraint shared by all humans, namely the human Just Noticeable Difference, categorizes and names colors through a

purely cultural negotiation in the form of language games. We found that the time needed for a population to reach consensus on a color name depends on the region of the visible color spectrum. If color spectrum regions are ranked according to this criterion, a hierarchy with [red, (magenta)-red], [violet], [green/yellow], [blue], [orange], and [cyan], appearing in this order, is recovered, featuring an excellent quantitative agreement with the empirical observations of the WCS. Our results demonstrate a clear possible route to the emergence of hierarchical color categories, confirming that the theoretical modeling in this area has now attained the required maturity to make significant contributions to the ongoing debates concerning language universals.

color hierarchy | complex systems | computational cognitive science | statistical physics | category game

MASCARO 2012

Olivier Mascaró & Gergely Csibra, *Representation of stable social dominance relations by human infants*. [PNAS 109 \(2012\), 6862–6867](#).

[pnas109-06862-Supplement1.mov](#), [pnas109-06862-Supplement2.mov](#),
[pnas109-06862-Supplement3.mov](#), [pnas109-06862-Supplement4.mov](#),
[pnas109-06862-Supplement5.mov](#), [pnas109-06862-Supplement6.mov](#)

What are the origins of humans' capacity to represent social relations? We approached this question by studying human infants' understanding of social dominance as a stable relation. We presented infants with interactions between animated agents in conflict situations. Studies 1 and 2 targeted expectations of stability of social dominance. They revealed that 15-month-olds (and, to a lesser extent, 12-month-olds) expect an asymmetric relationship between two agents to remain stable from one conflict to another. To do so, infants need to infer that one of the agents (the dominant) will consistently prevail when her goals conflict with those of the other (the subordinate). Study 3 and 4 targeted the format of infants' representation of social dominance. In these studies, we found that 12- and 15-month-olds did not extend their expectations of dominance to unobserved relationships, even when they could have been established by transitive inference. These results suggest that infants' expectation of stability originates from their representation of social dominance as a relationship between two agents rather than as an individual property. Infants' demonstrated understanding of social dominance reflects the cognitive underpinning of humans' capacity to represent social relations, which may be evolutionarily ancient, and may be shared with nonhuman species.

cognitive development | naïve sociology | human evolution | social cognition | relational reasoning

Datierung

MAROM 2012

Anat Marom, James S. O. McCullagh, Thomas F. G. Higham, Andrey A. Sinitsyn & Robert E. M. Hedges, *Single amino acid radiocarbon dating of Upper Paleolithic modern humans*. [PNAS 109 \(2012\), 6878–6881](#).

Archaeological bones are usually dated by radiocarbon measurement of extracted collagen. However, low collagen content, contamination from the burial environment, or museum conservation work, such as addition of glues, preservatives, and fumigants to “protect” archaeological materials, have previously led to inaccurate dates. These inaccuracies in turn frustrate the development of archaeological chronologies and, in the Paleolithic, blur the dating of such key events as the dispersal of anatomically modern humans. Here we describe a method to date hydroxyproline found in collagen ($\approx 10\%$ of collagen carbon) as a bone-specific biomarker that removes impurities, thereby improving dating accuracy and condense. This method is applied to two important sites in Russia

and allows us to report the earliest direct ages for the presence of anatomically modern humans on the Russian Plain. These dates contribute considerably to our understanding of the emergence of the Mid-Upper Paleolithic and the complex suite of burial behaviors that begin to appear during this period.

HPLC | accelerator mass spectrometry | Kostenki | Sungir

Klima

CALEY 2012

Thibaut Caley, Jacques Giraudeau, Bruno Malaizé, Linda Rossignol & Catherine Pierre, *Agulhas leakage as a key process in the modes of Quaternary climate changes*. *PNAS* **109** (2012), 6835–6839.

Heat and salt transfer from the Indian Ocean to the Atlantic Ocean (Agulhas leakage) has an important effect on the global thermohaline circulation and climate. The lack of long transfer record prevents elucidation of its role on climate changes throughout the Quaternary. Here, we present a 1,350-ka accumulation rate record of the planktic foraminiferal species *Globorotalia menardii*. We demonstrate that, according to previous assumptions, the presence and reseeded of this fauna in the subtropical southeast Atlantic was driven by interocean exchange south of Africa. The Agulhas transfer strengthened at glacial ice-volume maxima for every glacial-interglacial transition, with maximum reinforcements organized according to a 400-ka periodicity. The long-term dynamics of Agulhas leakage may have played a crucial role in regulating meridional overturning circulation and global climate changes during the Mid-Brunhes event and the Mid-Pleistocene transition, and could also play an important role in the near future.

CLARK 2012

Peter U. Clark et al., *Global climate evolution during the last deglaciation*. *PNAS* **109** (2012), 7140–7141.

[pnas109-07140-Fulltext.pdf](#)

Peter U. Clark, Jeremy D. Shakun, Paul A. Baker, Patrick J. Bartlein, Simon Brewer, Ed Brook, Anders E. Carlson, Hai Cheng, Darrell S. Kaufman, Zhengyu Liu, Thomas M. Marchitto, Alan C. Mix, Carrie Morrill, Bette L. Otto-Bliesner, Katharina Pahnke, James M. Russell, Cathy Whitlock, Jess F. Adkins, Jessica L. Blois, Jorie Clark, Steven M. Colman, William B. Curry, Ben P. Flower, Feng He, Thomas C. Johnson, Jean Lynch-Stieglitz, Vera Markgraf, Jerry McManus, Jerry X. Mitrovica, Patricio I. Moreno and John W. Williams

Deciphering the evolution of global climate from the end of the Last Glacial Maximum approximately 19 ka to the early Holocene 11 ka presents an outstanding opportunity for understanding the transient response of Earth's climate system to external and internal forcings. During this interval of global warming, the decay of ice sheets caused global mean sea level to rise by approximately 80 m; terrestrial and marine ecosystems experienced large disturbances and range shifts; perturbations to the carbon cycle resulted in a net release of the greenhouse gases CO₂ and CH₄ to the atmosphere; and changes in atmosphere and ocean circulation affected the global distribution and fluxes of water and heat. Here we summarize a major effort by the paleoclimate research community to characterize these changes through the development of welldated, high-resolution records of the deep and intermediate ocean as well as surface climate. Our synthesis indicates that the superposition of two modes explains much of the variability in regional and global climate during the last deglaciation, with a strong association between the first mode and variations in greenhouse gases, and between the second mode and variations in the Atlantic meridional overturning circulation.

DENG 2012

Tao Deng et al., *Locomotive implication of a Pliocene three-toed horse skeleton from Tibet and its paleo-altimetry significance*. *PNAS* **109** (2012), 7374–7378.

Tao Deng, Qiang Li, Zhijie Jack Tseng, Gary T. Takeuchi, Yang Wang, Guangpu Xie, Shiqi Wanga, Sukuan Hou, and Xiaoming Wang

The Tibetan Plateau is the youngest and highest plateau on Earth, and its elevation reaches one-third of the height of the troposphere, with profound dynamic and thermal effects on atmospheric circulation and climate. The uplift of the Tibetan Plateau was an important factor of global climate change during the late Cenozoic and strongly influenced the development of the Asian monsoon system. However, there have been heated debates about the history and process of Tibetan Plateau uplift, especially the paleo-altimetry in different geological ages. Here we report a wellpreserved skeleton of a 4.6 million-y-old three-toed horse (*Hipparion zandaense*) from the Zanda Basin, southwestern Tibet. Morphological features indicate that *H. zandaense* was a cursorial horse that lived in alpine steppe habitats. Because this open landscape would be situated above the timberline on the steep southern margin of the Tibetan Plateau, the elevation of the Zanda Basin at 4.6 Ma was estimated to be $\approx 4,000$ m above sea level using an adjustment to the paleo-temperature in the middle Pliocene, as well as comparison with modern vegetation vertical zones. Thus, we conclude that the southwestern Tibetan Plateau achieved the present-day elevation in the mid-Pliocene.

vertebrate paleontology | paleoecology | stable isotope | tectonics

MISHRA 2012

Vimal Mishra, Brian V. Smoliak, Dennis P. Lettenmaier & John M. Wallace, *A prominent pattern of year-to-year variability in Indian Summer Monsoon Rainfall*. *PNAS* **109** (2012), 7213–7217.

The dominant patterns of Indian Summer Monsoon Rainfall (ISMR) and their relationships with the sea surface temperature and 850hPa wind fields are examined using gridded datasets from 1900 on. The two leading empirical orthogonal functions (EOFs) of ISMR over India are used as basis functions for elucidating these relationships. EOF1 is highly correlated with all India rainfall and El Niño-Southern Oscillation indices. EOF2 involves rainfall anomalies of opposing polarity over the Gangetic Plain and peninsular India. The spatial pattern of the trends in ISMR from 1950 on shows drying over the Gangetic Plain projects onto EOF2, with an expansion coefficient that exhibits a pronounced trend during this period. EOF2 is coupled with the dominant pattern of sea surface temperature variability over the Indian Ocean sector, which involves in-phase fluctuations over the Arabian Sea, the Bay of Bengal, and the South China Sea, and it is correlated with the previous winter's El Niño-Southern Oscillation indices. The circulation anomalies observed in association with fluctuations in the time-varying indices of EOF1 and EOF2 both involve distortions of the low-level monsoon flow. EOF1 in its positive polarity represents a southward deflection of moist, westerly monsoon flow from the Arabian Sea across India, resulting in a smaller flux of moisture to the Himalayas. EOF2 in its positive polarity represents a weakening of the monsoon trough over northeastern India and the westerly monsoon flow across southern India, reminiscent of the circulation anomalies observed during break periods within the monsoon season.

MOON 2012

T. Moon, I. Joughin, B. Smith & I. Howat, *21st-Century Evolution of Greenland Outlet Glacier Velocities*. *science* **336** (2012), 576–578.
s336-0576-Supplement.pdf

Earlier observations on several of Greenland’s outlet glaciers, starting near the turn of the 21st century, indicated rapid (annual-scale) and large (> 100 %) increases in glacier velocity. Combining data from several satellites, we produce a decade-long (2000 to 2010) record documenting the ongoing velocity evolution of nearly all (200+) of Greenland’s major outlet glaciers, revealing complex spatial and temporal patterns. Changes on fast-flow marine-terminating glaciers contrast with steady velocities on ice-shelf-terminating glaciers and slow speeds on land-terminating glaciers. Regionally, glaciers in the northwest accelerated steadily, with more variability in the southeast and relatively steady flow elsewhere. Intraregional variability shows a complex response to regional and local forcing. Observed acceleration indicates that sea level rise from Greenland may fall well below proposed upper bounds.

PIGATI 2012

Jeffrey S. Pigati, Claudio Latorre, Jason A. Rech, Julio L. Betancourt, Katherine E. Martínez & James R. Budahn, *Accumulation of impact markers in desert wetlands and implications for the Younger Dryas impact hypothesis*. [PNAS](#) **109** (2012), 7208–7212.

[pnas109-07208-Supplement1.xls](#), [pnas109-07208-Supplement2.xls](#),
[pnas109-07208-Supplement3.xls](#), [pnas109-07208-Supplement4.xls](#)

The Younger Dryas impact hypothesis contends that an extraterrestrial object exploded over North America at 12.9 ka, initiating the Younger Dryas cold event, the extinction of many North American megafauna, and the demise of the Clovis archeological culture. Although the exact nature and location of the proposed impact or explosion remain unclear, alleged evidence for the fallout comes from multiple sites across North America and a site in Belgium. At 6 of the 10 original sites (excluding the Carolina Bays), elevated concentrations of various “impact markers” were found in association with black mats that date to the onset of the Younger Dryas. Black mats are common features in paleowetland deposits and typically represent shallow marsh environments. In this study, we investigated black mats ranging in age from approximately 6 to more than 40 ka in the southwestern United States and the Atacama Desert of northern Chile. At 10 of 13 sites, we found elevated concentrations of iridium in bulk and magnetic sediments, magnetic spherules, and/or titanomagnetite grains within or at the base of black mats, regardless of their age or location, suggesting that elevated concentrations of these markers arise from processes common to wetland systems, and not a catastrophic extraterrestrial impact event.

WALTER 2007

K. M. Walter, M. E. Edwards, G. Grosse, S. A. Zimov & F. S. Chapin III, *Thermokarst Lakes as a Source of Atmospheric CH₄ During the Last Deglaciation*. [science](#) **318** (2007), 633–636.

[s318-0633-Supplement.pdf](#)

Polar ice-core records suggest that an arctic or boreal source was responsible for more than 30 % of the large increase in global atmospheric methane (CH₄) concentration during deglacial climate warming; however, specific sources of that CH₄ are still debated. Here we present an estimate of past CH₄ flux during deglaciation from bubbling from thermokarst (thaw) lakes. Based on high rates of CH₄ bubbling from contemporary arctic thermokarst lakes, high CH₄ production potentials of organic matter from Pleistocene-aged frozen sediments, and estimates of the changing extent of these deposits as thermokarst lakes developed during deglaciation, we find that CH₄ bubbling from newly forming thermokarst lakes comprised 33 to 87 % of the high-latitude increase in atmospheric methane concentration and, in turn, contributed to the climate warming at the Pleistocene-Holocene transition.

ZIMOV 1997

S. A. Zimov et al., *North Siberian Lakes: A Methane Source Fueled by Pleistocene Carbon*. [science 277 \(1997\), 800–802](#).

S. A. Zimov, Y. V. Voropaev, I. P. Semiletov, S. P. Davidov, S. F. Prosiannikov, F. S. Chapin III, M. C. Chapin, S. Trumbore, S. Tyler

The sizes of major sources and sinks of atmospheric methane (CH₄), an important greenhouse gas, are poorly known. CH₄ from north Siberian lakes contributes ≈ 1.5 teragrams CH₄ year⁻¹ to observed winter increases in atmospheric CH₄ concentration at high northern latitudes. CH₄ emitted from these lakes in winter had a radiocarbon age of 27,200 years and was derived largely from Pleistocene-aged carbon.

ZIMOV 1999

S. A. Zimov, S. P. Davidov, G. M. Zimova, A. I. Davidova, F. S. Chapin III, M. C. Chapin & J. F. Reynolds, *Contribution of Disturbance to Increasing Seasonal Amplitude of Atmospheric CO₂*. [science 284 \(1999\), 1973–1976](#).

Recent increases in the seasonal amplitude of atmospheric carbon dioxide (CO₂) at high latitudes suggest a widespread biospheric response to high-latitude warming. The seasonal amplitude of net ecosystem carbon exchange by northern Siberian ecosystems is shown to be greater in disturbed than undisturbed sites, due to increased summer influx and increased winter efflux. Increased disturbance could therefore contribute significantly to the amplified seasonal cycle of atmospheric carbon dioxide at high latitudes. Warm temperatures reduced summer carbon influx, suggesting that high-latitude warming, if it occurred, would be unlikely to increase seasonal amplitude of carbon exchange.

ZIMOV 2005

Sergey A. Zimov, *Pleistocene Park: Return of the Mammoth's Ecosystem*. [science 308 \(2005\), 796–798](#).

ZIMOV 2006

Sergey A. Zimov, Edward A. G. Schuur & F. Stuart Chapin III, *Permafrost and the Global Carbon Budget*. [science 312 \(2006\), 1612–1613](#).

Climate warming will thaw permafrost, releasing trapped carbon from this highlatitude reservoir and further exacerbating global warming.

Kultur

KAHNEMAN 1979

Daniel Kahneman & Amos Tversky, *Prospect Theory: an analysis of decision under risk*. [Econometrica 47 \(1979\), 263–292](#).

This paper presents a critique of expected utility theory as a descriptive model of decision making under risk, and develops an alternative model, called prospect theory. Choices among risky prospects exhibit several pervasive effects that are inconsistent with the basic tenets of utility theory. In particular, people underweight outcomes that are merely probable in comparison with outcomes that are obtained with certainty. This tendency, called the certainty effect, contributes to risk aversion in choices involving sure gains and to risk seeking in choices involving sure losses. In addition, people generally discard components that are shared by all prospects under consideration. This tendency, called the isolation effect, leads to inconsistent preferences when the same choice is presented in different forms. An alternative theory of choice is developed, in which value is assigned to gains and losses rather than to final assets and in which probabilities are replaced by decision weights. The value function is normally concave for gains, commonly convex for

losses, and is generally steeper for losses than for gains. Decision weights are generally lower than the corresponding probabilities, except in the range of low probabilities. Overweighting of low probabilities may contribute to the attractiveness of both insurance and gambling.

MILAN 2012

Neil F. Milan, Balint Z. Kacsoh & Todd A. Schlenke, *Alcohol Consumption as Self-Medication against Blood-Borne Parasites in the Fruit Fly*. *Current Biology* **22** (2012), 488–493.

Plants and fungi often produce toxic secondary metabolites that limit their consumption [1-4], but herbivores and fungivores that evolve resistance gain access to these resources and can also gain protection against nonresistant predators and parasites [3, 5-8]. Given that *Drosophila melanogaster* fruit fly larvae consume yeasts growing on rotting fruit and have evolved resistance to fermentation products [9, 10], we decided to test whether alcohol protects flies from one of their common natural parasites, endoparasitoid wasps [11-13]. Here, we show that exposure to ethanol reduces wasp oviposition into fruit fly larvae. Furthermore, if infected, ethanol consumption by fruit fly larvae causes increased death of wasp larvae growing in the hemocoel and increased fly survival without need of the stereotypical antiwasp immune response. This multifaceted protection afforded to fly larvae by ethanol is significantly more effective against a generalist wasp than a wasp that specializes on *D. melanogaster*. Finally, fly larvae seek out ethanol-containing food when infected, indicating that they use alcohol as an antiwasp medicine. Although the high resistance of *D. melanogaster* may make it uniquely suited to exploit curative properties of alcohol, it is possible that alcohol consumption may have similar protective effects in other organisms.

Religion

RUFFLE 2012

Bradley J. Ruffle & Richard Sosis, *Do religious contexts elicit more trust and altruism? An experiment on Facebook*. *unknown 2012 preprint1*, 1–30. <<http://www.bgu.ac.il/~bradley/>>.

We design a decision-making scenario experiment on Facebook to measure subjects' altruism and trust toward attendees of a religious service, a fitness class and a local music performance. Secular and religious subjects alike display significantly more altruism and trust toward the synagogue attendees than participants at the other two venues. By all measures of religiosity, even the most secular subjects behave more prosocially in the religious venue than in the comparable non-religious settings. We also find that secular subjects are just as altruistic toward synagogue and prayer group members as religious subjects are. These findings support recent theories that emphasize the pivotal role of religious context in arousing high levels of prosociality among those who are religious. Finally, our results offer startlingly little evidence for the widely documented religious-secular divide in Israel.

Keywords: religion, trust, altruism, religious context, religious-secular conflict.