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Literatur

Aktuell

Atkinson 2012

Quentin D. Atkinson, *Response to Comment on "Phonemic Diversity Supports a Serial Founder Effect Model of Language Expansion from Africa"*. science **335** (2012), 1042.

Jaeger et al. use statistical simulations to show that the serial founder effect analysis I reported has an inflated type 1 error rate. Crucially, however, their simulations also reveal that the strength of the observed relationship between phonemic diversity and distance from Africa is unlikely to be due to chance, even accounting for multiple comparisons and geographic clustering of phonemic diversity.

Jaeger 2012

T. Florian Jaeger, Daniel Pontillo & Peter Graff, *Comment on "Phonemic Diversity Supports a Serial Founder Effect Model of Language Expansion from Africa"*. science **335** (2012), 1042.

s332-0346-Supplement4.pdf

Atkinson (Reports, 15 April 2011, p. 346) argues that the phonological complexity of languages reflects the loss of phonemic distinctions due to successive founder events during human migration (the serial founder hypothesis). Statistical simulations show that the type I error rate of Atkinson's analysis is hugely inflated. The data at best support only a weak interpretation of the serial founder hypothesis.

Nieuwenhuis 2011

Sander Nieuwenhuis, Birte U Forstmann & Eric-Jan Wagenmakers, *Erroneous analyses of interactions in neuroscience: a problem of significance*. Nature Neuroscience **14** (2011), 1105–1107.

In theory, a comparison of two experimental effects requires a statistical test on their difference. In practice, this comparison is often based on an incorrect procedure involving two separate tests in which researchers conclude that effects differ when one effect is significant ($P < 0.05$) but the other is not ($P > 0.05$). We reviewed 513 behavioral, systems and cognitive neuroscience articles in five top-ranking journals (Science, Nature, Nature Neuroscience, Neuron and The Journal of Neuroscience) and found that 78 used the correct procedure and 79 used the incorrect procedure. An additional analysis suggests that incorrect analyses of interactions are even more common in cellular and molecular neuroscience. We discuss scenarios in which the erroneous procedure is particularly beguiling.

van Noorden 2012

Richard van Noorden, *Trouble at the text mine*. nature **483** (2012), 134–135.

Computers can rapidly scan through thousands of research papers to make useful connections, but work is being slowed by publishers' unease.

Reich 2012

Eugenie Samuel Reich, *A solid case for Majorana fermions*. nature **483** (2012), 132.

First compelling evidence of self-annihilating entities in a semiconductor is a step forward for quantum computing.
The Delft group tested a 2010 proposal that a pair of Majorana fermions could form at the interface between a superconductor and a semiconducting nano wire in a magnetic field (R. M. Lutchyn et al. Preprint at http://arxiv.org/abs/1002.4033; 2010). Majoranas are electrically neutral, and the mass of freefloating electrical charge in the superconductor allows electrons and absences of electrons – known as holes – to form neutral entities at the interface with the nanowire. Kouwenhoven reported a peak in the conductance through the nanowire at zero voltage: a signature of a spatially separated pair of Majoranas forming.
Patrick Lee, a physicist at the Massachusetts Institute of Technology in Cambridge, says that he wouldn't call the observation a discovery just yet. He argues that other peaks in Kouwenhoven's data point to the existence of non-Majorana states that could be mimicking the long-sought-after phenomenon. Even if Majorana fermions have surfaced, those other states could prove a problem for any possible application in quantum computing.

Anthropologie

Dean 2012

L. G. Dean, R. L. Kendal, S. J. Schapiro, B. Thierry & K. N. Laland, *Identification of the Social and Cognitive Processes Underlying Human Cumulative Culture*. science **335** (2012), 1114–1118.
s335-1114-Supplement.pdf
The remarkable ecological and demographic success of humanity is largely attributed to our capacity for cumulative culture, with knowledge and technology accumulating over time, yet the social and cognitive capabilities that have enabled cumulative culture remain unclear. In a comparative study of sequential problem solving, we provided groups of capuchin monkeys, chimpanzees, and children with an experimental puzzlebox that could be solved in three stages to retrieve rewards of increasing desirability. The success of the children, but not of the chimpanzees or capuchins, in reaching higher-level solutions was strongly associated with a package of sociocognitive processes-including teaching through verbal instruction, imitation, and prosociality-that were observed only in the children and covaried with performance.

Hill 2012

Kim Hill & A. Magdalena Hurtado, *Human reproductive assistance*. nature **483** (2012), 160–161.
What is the biological explanation for menopause, and for female survival beyond it? A study suggests that competition for help in ancestral societies may have been key to the evolution of this unusual human trait.
Under the 'grandmother hypothesis', menopause is theorized to have evolved mainly so that mothers would aid their own daughters' reproduction. This hypothesis stems from the idea that the greater food-provisioning capacity of older women in ancestral societies might have had sufficient impact on their daughters' fertility and grandchildren's survival to favour the evolution of reproductive cessation in order to make women available to help8. But although the helping effects of grandmothers are often statistically significant, studies show that they are probably not great enough to outweigh the loss of genetic contribution that could otherwise be attained through direct reproduction9. Furthermore, the grandmother hypothesis does not explain how menopause has been maintained in viri local populations. Mace and Alvergne's finding that the effects of competition on

reproductive success in overlapping generations extend to women who do not reside in the same household helps to resolve this potential inconsistency.

Kurzban 2012

Robert Kurzban & H. Clark Barrett, *Origins of Cumulative Culture*. science **335** (2012), 1056–1057.

Why does human culture accumulate, but that of other species do not?

This work provides many valuable new insights into the question of cumulative culture. However, the human species is unique, with its own particular package of psychological elements, and assigning subjects randomly to species is, of course, impossible. It is thus diffi cult to draw strong causal conclusions based on differences between humans and other primates, and the usual diffi culties for inferring causality from correlational data apply. Unmeasured third variables might be responsible for both between-species differences and within-species effects.

For example, the products of the gradual accumulation of culture in humans include elaborate, hierarchically organized representations such as formal mathematics and the rules of language. Thus, a capacity to form complex concepts or other unmeasured cognitive abilities, such as skills of causal inference or the ability to make inferences about the mental states of others, might infl uence both performance on the puzzlebox and the degree of imitation and pedagogy.

Adaptations currently part of the set of human mental capacities may or may not be responsible for the initial evolutionary divergence of human cultural capacities. In short, fi nding psychological differences between species in the present does not in itself afford the inference that these differences led to divergence in the domain in question.

Mace 2012

Ruth Mace & Alexandra Alvergne, *Female reproductive competition within families in rural Gambia*. Proc. Royal Society B (2012) preprint, 1–9. DOI:10.1098/rspb.2011.2424.

ProcRSocB2012-preprint-Supplement.pdf

Many studies show that the extended human family can be helpful in raising offspring, with maternal grandmothers, in particular, improving offspring survival. However, less attention has been given to competition between female kin and co-residents. It has been argued that reproductive conflict between generations explains the evolution of menopause in cooperatively breeding species where females disperse, and that older females are related to the offspring of younger females through their sons, whereas younger, incoming females are unrelated to older females. This means the pattern of help will be asymmetric, so older females lose in reproductive conflict and become 'sterile helpers'. Here, we seek evidence for female reproductive competition using longitudinal demographic data from a rural Gambian population, and examine when women are helping or harming each other's reproductive success. We find that older women benefit and younger women suffer costs of reproductive competition with women in their compound. But the opposite is found for mothers and daughters; if mother and daughter's reproductive spans overlap, the older woman reduces her reproduction if the younger woman (daughter) reproduces, whereas daughters' fertility is unaffected by their mothers' reproduction. Married daughters are not generally co-resident with their mothers, so we find not only competition effects with co-resident females, but also with daughters who have dispersed. Dispersal varies across human societies, but our results suggest reproductive conflict could be influencing reproductive scheduling whatever the dispersal pattern. A cultural norm of late male marriage reduces paternal grandmother/ daughter-in-law reproductive overlap almost to zero in this population. We argue that cultural norms surrounding residence and marriage are themselves cultural adaptations to reduce reproductive conflict between generations in human families.

Keywords: reproductive competition; grandmothers; co-residence; kinship; cultural norms; menopause

Niemitz 2010

Carsten Niemitz, *The evolution of the upright posture and gait—a review and a new synthesis*. Naturwissenschaften **97** (2010), 241–263.

During the last century, approximately 30 hypotheses have been constructed to explain the evolution of the human upright posture and locomotion. The most important and recent ones are discussed here. Meanwhile, it has been established that all main hypotheses published until the last decade of the past century are outdated, at least with respect to some of their main ideas: Firstly, they were focused on only one cause for the evolution of bipedality, whereas the evolutionary process was much more complex. Secondly, they were all placed into a savannah scenario. During the 1990s, the fossil record allowed the reconstruction of emerging bipedalism more precisely in a forested habitat (e.g., as reported by Clarke and Tobias (Science 269:521-524, 1995) and WoldeGabriel et al. (Nature 412:175-178, 2001)). Moreover, the fossil remains revealed increasing evidence that this part of human evolution took place in a more humid environment than previously assumed. The Amphibian Generalist Theory, presented first in the year 2000, suggests that bipedalism began in a wooded habitat. The forests were not far from a shore, where our early ancestor, along with its arboreal habits, walked and waded in shallow water finding rich food with little investment. In contrast to all other theories, wading behaviour not only triggers an upright posture, but also forces the individual to maintain this position and to walk bipedally. So far, this is the only scenario suitable to overcome the considerable anatomical and functional threshold from quadrupedalism to bipedalism. This is consistent with paleoanthropological findings and with functional anatomy as well as with energetic calculations, and not least, with evolutionary psychology. The new synthesis presented here is able to harmonise many of the hitherto competing theories.

Keywords: Orthograde posture | Bipedalism | Upright gait | Shore dwelling | Evolution

Datierung

Potter 2012

Ben A. Potter & Joshua D. Reuther, *High Resolution Radiocarbon Dating at the Gerstle River Site, Central Alaska*. American Antiquity **77** (2012), 71–98.

Early Holocene cultural material at Gerstle River, central Alaska, provides excellent contextual controls for examining variability in radiocarbon dating. Over 4,000 bone and teeth fragments are directly associated with over 7,000 lithic artifacts and 10 discrete charcoal-rich hearths in a thin occupation layer (≈10 cm vertical thickness) within well-stratified loess deposits. Radiocarbon dating of the hearth features indicates overlapping ages at 2s, suggesting contemporaneity. This study uses the high level of resolution at Gerstle River to evaluate systematic radiocarbon variation due to different materials (collagen and charcoal), different pretreatments of collagen (regular and ultrafiltered), and interlaboratory variation through paired bone and hearth charcoal dates, split samples, and cross-checks. Accurately dating bone collagen is important given the closer association of dated samples with human activities (e.g., butchering) compared with charcoal fragments in certain contexts (e.g., driftwood, paleosols, or alluvial deposits). This study demonstrates the efficacy of bone collagen dating with ultrafiltration to counter potential site-specific contamination. These results also indicate that even in high-resolution situations with little evidence for old-wood effect and contamination, considerable variability can exist among cross-check and even split samples from single pieces of charcoal from short-lived species.

Grundlagen

Bird 2009

Douglas W. Bird, Rebecca Bliege Bird & Brian F. Codding, *In Pursuit of Mobile Prey: Martu hunting strategies and archaeofaunal interpretation.* American Antiquity **74** (2009), 3–29.

By integrating foraging models developed in behavioral ecology with measures of variability in faunal remains, zooar chaeological studies have made important contributions toward understanding prehistoric resource use and the dynamic interactions between humans and their prey. However, where archaeological studies are unable to quantify the costs and benefits associated with prey acquisition, they often rely on proxy measures such as prey body size, assuming it to be posi tively correlated with return rate. To examine this hypothesis, we analyze the results of 1,347 adult foraging bouts and 649 focal follows of contemporary Martu foragers in Australia's Western Desert. The data show that prey mobility is highly cor related with prey body size and is inversely related to pursuit success?meaning that prey body size is often an inappropri ate proxy measure of prey rank. This has broad implications for future studies that rely on taxonomic measures of prey abundance to examine prehistoric human ecology, including but not limited to economic intensification, socioeconomic complexity, resource sustainability, and overexploitation.

Bird 2012

Douglas W. Bird, Brian F. Codding, Rebecca Bliege Bird, & David W. Zeanah, *Risky Pursuits: Martu Hunting and the Effects of Prey Mobility: Reply to Ugan and Simms.* American Antiquity **77** (2012), 186–194.

We recently demonstrated that prey size is not a reliable predictor of post-encounter return rates for resources Martu hunters regularly handle in Australia's Western Desert (Bird et al. 2009). Ugan and Simms are skeptical of our calculations of these returns, especially in our inclusion of tracking as pursuit time. Here we review how these variables were recorded and calculated, update the analysis with more data, and clarify the importance of prey mobility and pursuit failures for understanding the contexts of hunting decisions and their archaeological implications.

Cannon 2003

Michael D. Cannon, *A model of central place forager prey choice and an application to faunal remains from the Mimbres Valley, New Mexico.* Journal of Anthropological Archaeology **22** (2003), 1–25.

Drawing on models from foraging theory, many researchers have used assemblages of animal bones from archaeological sites to document cases of resource depression and reduced foraging efficiency. This paper presents a model of central place forager prey choice that unifies several issues that these previous studies have addressed through the use of separate models. In comparison to the models usually employed, the model presented here makes assumptions that more closely match the ways in which human hunting is often carried out, and it also makes it easier to determine how decisions about the processing of prey at their point of capture will combine with decisions about prey choice to influence overall foraging efficiency for central place foragers. The benefits that arise from the use of such a model are illustrated by applying it to archaeofaunal data from the Mimbres Valley, southwestern New Mexico, where it appears that people experienced depression of large mammal resources, and declining hunting efficiency, during the period between about AD 400 and AD 1200.

Keywords: Foraging theory; Central place foraging; Resource depression; Zooarchaeology; Mimbres; Mogollon

Grimstead 2012

Deanna N. Grimstead, *Prestige and Prejudice: The Role of Long Distance Big Game Hunting as an Optimal Foraging Decision*. American Antiquity **77** (2012), 168–178.

Signaling theory has much to offer anthropology and archaeology, which is in part why there is an increasing number of applications and healthy debates surrounding how best to apply it. One of those debates surrounds whether big game hunting is a costly signal or simply an aspect of efficient foraging. Grimstead (2010) contributed to this debate by showing that long-distance big-game hunting (greater than 100 km roundtrip) produces higher caloric return rates than does local small-game hunting, despite increased costs of travel and transport for the former. Whittaker and Carpenter (this issue) present a model that also suggests long-distance big-game hunting produces higher economic returns than local foraging but only up to about 50 km. This paper provides further details on the tenets of the Grimstead (2010) paper in response to criticisms by Whittaker and Carpenter (this issue), and then uses a previously published central place foraging model (Cannon 2003) to show that another model also shows long-distance big-game hunting over a distance greater than 100 kilometers roundtrip produces higher returns than local foraging.

Holtby 2012

Ian Holtby, Chris Scarre, R. Alexander Bentley & Peter Rowley-Conwy, *Disease, CCR5-Δ32 and the European spread of agriculture? A hypothesis*. Antiquity **86** (2012), 207–210.

A hypothesis for low TerminalMesolithic populations is the introduction of new diseases such as smallpox, measles, brucellosis and influenza into Europe with incoming Neolithic populations. Those diseases known as 'zoonoses' may have been derived through domestic livestock living in close and regular proximity with humans in substantial populations. We suggest that a prime genetic candidate for this resistance is CCR5-Δ32, a mutant allele of the CCR5 gene. Normally, this gene encodes the lymphocyte transmembrane coreceptor to which HIV can bind, enabling the virus to infect CD4 lymphocytes. In people homozygous for the CCR5-Δ32 allele, however, the truncated CCR5 does not reach the cell surface, thus preventing access to HIV. The CCR5-Δ32 allele is found in 10–15 % of people of Northern European descent and is rare or absent in those of Asian or African descent. If diseases such as smallpox had been brought to Europe via Neolithic spread, it would be ironic if LBK populations gained CCR5-Δ32 frequency through intermarriage with certain north European Mesolithic groups, who were already carriers of the CCR5-Δ32 allele. This could explain the relative survival of some Mesolithic groups while others, lacking both CCR5-Δ32 and the more general resistance of Neolithic groups, perished.

Ugan 2012

Andrew Ugan & Steven Simms, *On Prey Mobility, Prey Rank, and Foraging Goals*. American Antiquity **77** (2012), 179–185.

In their recent paper "In Pursuit of Mobile Prey," Bird, Bliege-Bird, and Codding (2009) identify a negative relationship between body size and post-encounter returns among Martu prey in western Australia, attributing the phenomena to the greater mobility of large animals and associated risk of hunting failure. While this phenomenon has implications for archaeological applications of foraging models that assume body size and on-encounter returns are positively correlated, the Martu data may be less exceptional than they appear. Here we outline the reasons for our skepticism, point out areas in which we are in agreement, and build upon their findings by exploring the trade-offs between foraging to maximize efficiency and immediate returns and foraging for purposes other than immediate provisioning.

Whitaker 2012

Adrian R. Whitaker & Kimberley L. Carpenter, *Economic Foraging at a Distance Is Not a Question of If but When: A Response to Grimstead*. American Antiquity **77** (2012), 160–167.

Grimstead (2010) develops a transport model that appears to demonstrate that distant patch hunting is energetically efficient at distances of well over 350 km. However, a close examination of her assumptions raises questions concerning the validity of her approach. Here, we examine the effects of using more ecologically justifiable parameters and consider the cost of time spent away from camp on her model's outcomes. We find that under revised constraints the model yields much shorter maximum transport distances and argue, therefore, that distant patch hunting may be calorically economical in some cases, but not in others.

Kultur

Lemercier 2012

Olivier Lemercier, *Interpreting the Beaker phenomenon in Mediterranean France: an Iron Age analogy*. Antiquity **86** (2012), 131–143.

The author offers a new descriptive explanation of the Beaker phenomenon, by focusing on Mediterranean France and making reference to the Greek influx in the same area 2000 years later. In the Iron Age, the influence began with an exploratory phase, and then went on to create new settlements and colonise new areas away from the coast. The Beaker analogy is striking, with phases of exploration and implantation and acculturation, but adjusted to include a final phase where Beaker practice was more independent. Comparing the numerous models put forward to explain it, the author shows that immigration and a cultural package are both aspects of the Beaker phenomenon.

Keywords: Iberia, France, Mediterranean, Beaker, Campaniform, third millennium BC, Iron Age, protohistory, first millennium BC

Methoden

Knell 2012

Edward J. Knell & Matthew E. Hill, Jr., *Linking Bones and Stones: Regional Variation in Late Paleoindian Cody Complex Land Use and Foraging Strategies*. American Antiquity **77** (2012), 40–70.

Using lithic and faunal data from 33 Cody complex (10,000-8600 I4C years B.P.) components from the northern Great Plains, this study explores how Paleoindian land use and foraging strategies varied in relation to resource structure at the regional scale. The analysis of regional-scale faunal and lithic data was undertaken to demonstrate how disparate but related datasets must be considered together to develop a more complete understanding of hunter-gatherer lifeways. Empirical observations from the Cody archaeological record were compared to an optimal foraging theory and temporal resource predictability theory-inspired land-use model. The model predicts, and the data support, a pattern whereby Cody groups in the resource-rich foothill-mountain zone employed a regionally restricted land-use strategy for a protracted portion of the year, made spatially limited movements during which they relied on local toolstone, and expanded diet breadth by hunting a mixture of dispersed bison herds and small-bodied animals. In the comparatively resource-poor plains grasslands and adjacent alluvial valleys, the model predicts and the data indicate that Cody groups employed a nonregionally restricted land-use strategy in which they rapidly moved through regions, relied on nonlocal toolstone

sources, made many residential moves over vast areas, and relied on a narrow range of biotic resources (primarily bison).

Neolithikum

Willcox 2012

George Willcox & Danielle Stordeur, *Large-scale cereal processing before domestication during the tenth millennium cal BC in northern Syria*. Antiquity **86** (2012), 99–114.

At Jerf el Ahmar in northern Syria the authors have excavated a settlement where the occupants were harvesting and processing barley 1000 years in advance of its domestication. Rows of querns installed in square stone and daub buildings leave no doubt that this was a community dedicated to the systematic production of food from wild cereals. Given the plausible suggestion that barley was being cultivated, the site opens a window onto a long period of pre-domestic agriculture. Rye was also harvested, its chaff used to temper mud walls.

Keywords: Levant, Syria, agriculture, barley, querns

Story or Book

Book 2012

Masters of the Planet: The Search for Our Human Origins. nature **483** (2012), 155.

Masters of the Planet: The Search for Our Human Origins. Ian Tattersall. Palgrave Macmillan 288 pp. £16.99 (2012)

In this succinct and masterful palaeo-chronicle, Ian Tattersall traces how Homo sapiens ended up as the world's sole hominin. Tattersall, co-curator of the Spitzer Hall of Human Origins at the American Museum of Natural History in New York, takes us from 6 million years ago in Africa's Rift Valley to the present day. On the way, he brilliantly describes humanity's cousins and rivals, from apes to the other hominins that competed with H. sapiens as, tens of thousands of years ago, our ancestors made the cognitive leap to symbolic thought.