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Literatur

Afrika

Hassan 1993

Fekri A. Hassan, *Town and village in ancient Egypt, Ecology, society and urbanization*. In: Thurstan Shaw, Paul Sinclair, Bassey Andah & Alex Okpoko (Hrsg.), *The Archaeology of Africa, Food, metals and towns*. (London 1993), 551–569.

The achievements of the Egyptian civilization dating back to c. 3000 BC and lasting for three millennia thereafter loom high as one of the earliest manifestations of the great artistic, literary and intellectual potential of humankind. These achievements were inseparable from agricultural production and a system of accumulating wealth, mobilizing a massive labour force for monumental works, patronizing crafts, marshalling armies and pursuing lofty intellectual concerns. The achievements of this great civilization were associated with the emergence of towns. The towns were characteristically relatively larger than farming villages, but more importantly they were distinguished by the concentration of managerial, religious, military, commercial or 'industrial' activities. This concentration was a manifestation of a new political landscape. In this chapter I develop a model of urbanization in early state societies, explore various aspects of towns in ancient Egypt, their development, size and hierarchy, and examine their relationships to agricultural productivity, transportation and social interaction on the basis of hypothetical constructs.

Robertshaw 1993

Peter Robertshaw, *The beginnings of food production in southwestern Kenya*. In: Thurstan Shaw, Paul Sinclair, Bassey Andah & Alex Okpoko (Hrsg.), *The Archaeology of Africa, Food, metals and towns*. (London 1993), 358–371.

One might argue that east Africa has little or nothing to offer towards finding the answer to the 'Big Question' of the origins of agriculture, but to do so would be to deny the fact that consideration of the 'where', 'when' and 'how' of food production is really of secondary importance compared to the explanation of the process of the spread of food production across much of the globe and what that involved in terms of human interactions and adaptations – those of farmers, pastoralists and foraging peoples.

Aktuell

Borjigin 2013

Jimo Borjigin, Michael M. Wang & George A. Mashour, *Experimental evidence lays a foundation for a rational understanding of near-death experiences, Reply to Greyson et al.* PNAS **110** (2013), E4406.

Greyson et al. claim that our findings are not consistent with EEGs of humans at near death. However, all EEG data from humans during cardiac arrest were collected using scalp electrodes. In contrast, our EEG data were collected using

intracranial electrodes, which are much more sensitive. Moreover, the human near-death EEG data have not been analyzed using the advanced signal processing tools that are used in our study.
Second, it is possible that a larger proportion of cardiac arrest patients have NDEs but that most individuals cannot recall the experience. In light of this information, we respectfully disagree with the opinion of Greyson and colleagues and strongly believe that our findings will contribute to a better understanding of near-death experiences.

Greyson 2013

Bruce Greyson, Edward F. Kelly & W. J. Ross Dunseath, *Surge of neurophysiological activity in the dying brain*. PNAS **110** (2013), E4405.

Second, the activity observed following cardiac arrest represents a tiny fraction of the total neuroelectric power present just before arrest (as indicated in figures 1 and 2 of Borjigin et al.), and thus it is misleading to describe these rat brains as being "hyperaroused."
[W]e believe that the finding of Borjigin et al. of surprising brain electrical activity after cardiac arrest, although intriguing and meriting further investigation, is unlikely to contribute to an understanding of near-death experiences.

Amerika

Adovasio 2005

J. M. Adovasio & D. R. Pedler, *A Long View of Deep Time at Meadowcroft Rockshelter*. In: Robson Bonnichsen, Bradley T. Lepper, Dennis Stanford & Michael R. Waters (Hrsg.), *Paleoamerican Origins, Beyond Clovis*. Peopling of the Americas (College Station 2005), 23–28.

Since the initiation of excavations in 1973, Meadowcroft Rockshelter has borne levels of visibility and notoriety far out of proportion with its relatively modest physical dimensions. By turns praised, vilified, and ignored in scholarly debate, Meadowcroft Rockshelter nonetheless remains one of the best candidates for the oldest locus of human occupation in North America and the longest record of human occupation in the Western Hemisphere. Whatever its antiquity, the site is widely viewed as the most carefully excavated and extensively documented site of its kind in North America. This contribution summarizes the history of work at Meadowcroft and assesses the implications of that work for the archaeology of Pennsylvania and North America.

Bonnichsen 2005

Robson Bonnichsen & Bradley T. Lepper, *Changing Perceptions of Paleoamerican Prehistory*. In: Robson Bonnichsen, Bradley T. Lepper, Dennis Stanford & Michael R. Waters (Hrsg.), *Paleoamerican Origins, Beyond Clovis*. Peopling of the Americas (College Station 2005), 9–19.

The articles presented in this volume make it abundantly clear that there is now a substantial evidentiary record from First American sites in North and South America supporting the view that the Americas were peopled before the appearance ol Clovis. The Clovis-first model productively guided research tor more than three

decades, but it now has been falsified. The demise of the Clovis-first model leaves a void that challenges model builders to construct new Paleoamerican origin models that will encompass the wealth of archaeological and paleobiological data presented by the contributors to this volume. This is an exciting time to be studying the peopling of the Americas.

Bonnichsen 2005
: Robson Bonnichsen, Bradley T. Lepper, Dennis Stanford & Michael R. Waters (Hrsg.), *Paleoamerican Origins*, *Beyond Clovis*. Peopling of the Americas (College Station 2005).

Bonnichsen 2005
: Dennis Stanford, Robson Bonnichsen, Betty Meggers & D. Gentry Steele, *Paleoamerican Origins*, *Models, Evidence, and Future Directions*. In: Robson Bonnichsen, Bradley T. Lepper, Dennis Stanford & Michael R. Waters (Hrsg.), *Paleoamerican Origins*, *Beyond Clovis*. Peopling of the Americas (College Station 2005), 313–353.

Following the discovery of "Paleolithic" projectile points associated with Ice Age animals near Clovis, New Mexico, scholars made the assumption that these artifacts were used by descen-dents of ancient hunters who migrated "out of Asia" across the Bering Land Bridge and traversed an ice-free corridor to populate the Americas. This unilineal theory of New World origins became so rooted in scientific and public thinking that it evolved into "fact" without the benefit of proof. This paper assesses the progress of more than three quarters of a century of research focused on resolving the questions of the peopling of the Americas and concludes that there is sufficient evidence of multiple migrations to rule out the unilineal "Clovis-first" descent theory.

The growing body of new interdisciplinary data has currently resulted in three colonizing scenarios to replace the Clovis-first model. These models include: multiple terrestrial migrations across Beringia into the Americas; expansion around the North Pacific Rim by Southeast Asian paleomariners; and a westward extension of Paleoeuropean sea mammal hunters exploiting the North Atlantic ice margin. We conclude that while these or even combinations of these models are logical possibilities to be tested, at present they only have minimal empirical supporting evidence.

We also examine variations in technology against a chronological framework to assess the existence of multiple cultural patterns that represent adaptations to the varied environments and dramatic climate changes encountered as the First Americans dispersed across the Western Hemisphere. These patterns include a long-lived megamammal bone-flaking technology that extended from Eurasia across Beringia and southward into North America as far as the Valley of Mexico. An early unifacially flaked stone tool pattern is common in South America and lasts until the beginning of the Holocene. This pattern is poorly represented in North America. The "signature" pattern of the Americas is the bifacially flaked stone projectile point.

While the bifacially flaked pattern is most common and diverse in North America, it also occurred southward to the very tip of the South American Cone. From its earliest occurrences, this pattern is so variable in technology and form that we considered the variations co-traditions, many of which overlapped time and space. These include pre-Clovis (Cactus Hill, Meadow-croft, and Page-Ladson), Clovis,

Nenana, Goshen/Plainview, Western Stemmed points of North America, and El Jobo, Fishtail and Paiján points of South America. At present it is ambiguous if these co-traditions represent regional adaptations or have independent origins.
We conclude that the scientific database, though growing, is currently insufficient to explain the intricate web ol" social, biological, and environmental interactions that over untold millennia evolved into modern Americans. Therefore, it is imperative to study and preserve every important archaeological discovery if we ever hope to achieve an understanding of the rich story of the peopling of the Americas.
Unfortunately, the Native American Graves Protection and Repatriation Act (NAGPRA), which was intended to balance the interest of Native Americans, scientists, and the public, may in fact make it difficult to acquire critical data in the future. Satisfactory regulations have not been developed to insure fair and objective decisions regarding study of Paleoamericans, and many federal agencies and institutions have returned remains that have little if any affiliation with modern tribal groups. This situation became apparent with the discovery of the Kennewick Man, a Paleoamerican who died as a result of a violent confrontation over 9,000 years ago. The Corps of Engineers decided to summarily give Kennewick Man's remains to the local tribes for burial even though preliminary studies strongly suggested they were not related. Fortunately, this did not happen and Kennewick Man's contribution to the history of the First Americans will be preserved for the time being.
State and federal agencies as well as tribes and the general public should understand that many different tribal groups as well as non-Indians have a common heritage with prehistoric people such as Kennewick Man. Or, in the case of lineal extinction, there may be no living descendants. To accurately identify prehistoric social groups and understand their relationships to one another as well as to modern tribes, we need to develop and use new technologies and methods to test alternative hypotheses using scientific methods. By constructing better descent models and following rules of evidence, we can accurately resolve conflicts of ethnic and social affiliation. Certainly, because theoretical, technological, and analytical innovations will occur, it is imperative to hear the "Ancient Ones" who have patiently waited to tell the stories of their times and lives through the archaeological record.

Fiedel 1999

Stuart J. Fiedel, *Older than we thought, Implications of corrected dates for Paleoindians.* American Antiquity **64** (1999), 95–115.
Radiocarbon dates for the terminal Pleistocene are about 2,000 years too young. Furthermore, because of significant carbon perturbations that are manifest as plateaus or abrupt jumps in age, radiocarbon dates of ca. 12,500 to 10,000 B.P [14C] must be critically evaluated. The first successful human colonization of the Americas occurred not 11,500 but about 13,500 years ago. This basic chronological revision has important implications for models of Paleoindian colonization, population expansion, and genetic and linguistic divergence.

Fiedel 2005

Stuart J. Fiedel, *Rapid Clovis Colonization of the Americas, Chronological Evidence and Archaeological Analogues.* In: Robson Bonnichsen, Bradley T. Lepper, Dennis Stanford & Michael R. Waters (Hrsg.), *Paleoamerican Origins, Beyond Clovis.* Peopling of the Americas (College Station 2005), 97–102.
Paleoindians of the Clovis culture colonized the Americas within 6OO years or less (ca. 15,500-12,900 CALYBP). The archaeologically attested movement of Thule

whale hunters from Alaska to Greenland between A.D. 900 and 1050 is an analogous case of rapid long-distance expansion. Climate change and inter-societal competition may have spurred migration in both cases. Thule Inuit replaced precursors of the Dorset culture throughout the Arctic; if there were pre-Clovis people in the Americas, they were replaced by Clovis in North America, and by makers of Clovis-derived fishtail points in South America.

Goodyear 2005

Albert C. Goodyear, *Evidence for Pre-Clovis Sites in the Eastern United States*. In: Robson Bonnichsen, Bradley T. Lepper, Dennis Stanford & Michael R. Waters (Hrsg.), *Paleoamerican Origins, Beyond Clovis*. Peopling of the Americas (College Station 2005), 103–112.

Over the past 25 years, a number of archaeological sites in eastern North America have manifested evidence of human occupations dating earlier than 11,500 RCYBP. These sites include Meadowcroft Rockshelter, Penn.; Cactus Hill, Va.; Saltville-2, Va.; and Topper, S.C. Except for Topper, pre-Clovis (earlier than 11,500 RCYBP) remains were encountered incidental to conducting normal research. Topper was intentionally tested for the possibility of pre-Clovis remains. This paper is a brief review of the geological contexts, dating, and artifactual evidence of these sites. Collectively, they indicate a late-glacial time range of approximately 12,000 to 16,000 RCYBP. Technologically, Meadowcroft Rock-shelter and Cactus Hill are the most similar, with evidence of bifacial points, unifaces, and prismatic blades. Although probable bone and ivory artifacts are present, lithics at Saltville-2 are expedient and minimal, making comparisons difficult. Topper, which is a chert quarry, is distinctive in that it has no evidence of bifaces and is dominated by small flake tools with an emphasis on burin-like tools. More geoarchaeological fieldwork is needed to target landforms that possess sediments deposited from 18,000 to 12,000 RCYBP. The Southeast may be a good place to prospect for these sites, given its milder climate during late-glacial times. The purpose ot this paper is to present briefly archaeological evidence ot human occupation of the eastern United States prior to 11,500 KCYBIP, the conventional pre-Clovis temporal boundary. Four sites are reviewed for their artifacts, geological contexts, and dating. While questions, reservations, and rejections exist within the profession concerning some or all of these sites, nevertheless it is believed that they sufficiently meet these criteria and thus constitute evidence.

Haynes 2005

C. Vance Haynes, Jr., *Clovis, Pre-Clovis, Climate Change, and Extinction*. In: Robson Bonnichsen, Bradley T. Lepper, Dennis Stanford & Michael R. Waters (Hrsg.), *Paleoamerican Origins, Beyond Clovis*. Peopling of the Americas (College Station 2005), 113–132.

The route for initial peopling of the Americas is not known in spite of recent opinions to the contrary. A coastal route and the ice-free corridor route are still working hypotheses that need further testing. Clovis progenitors are also hypothetical. However, prevailing biases suggest a coastal route to the exclusion of an ice-free corridor route, and Clovis originating from an unproven pre-Clovis population in the Americas. Presented here are data to suggest that an ice-free passage during the Allerod warm period may have extended from the unglaciated Yukon Plateau to the Pelly Valley to the Liard Valley to the interior Plains of Canada in time for people of the Nenana complex in Central Alaska between 11,800 and 11,500

KCYBP to move to the Great Plains and become progenitors of the Clovis complex by 11,500 KCYBP. Whereas Clovis expansion throughout North America coincides with extinction of Rancholabrean fauna at about 10,890 KCYBP, "black mat" stratigraphy indicates the event was too sudden to have been caused by either human predators alone or climate change alone. Instead a combination of predation, drought, and the Younger Dryas deepfreeze may have been the cause of the Rancholabrean termination.

Jodry 2005

Margaret A. Jodry, *Envisioning Water Transport Technology in Late-Pleistocene America*. In: Robson Bonnichsen, Bradley T. Lepper, Dennis Stanford & Michael R. Waters (Hrsg.), *Paleoamerican Origins, Beyond Clovis*. Peopling of the Americas (College Station 2005), 133–160.

Human use of watercraft dates back at least thirty thousand years and some researchers propose that this technology enabled the peopling ol Australia closer to fifty thousand years ago. Due to the vagaries ol preservalion across millennia, direct evidence of Paleolithic rafts or boats is lacking despite other data substantiating their use. Archeologisls infer the existence of Paleolithic watercraft from indirect evidence such as the transport of stone across bodies of water that separate locations where raw stone was acquired from places where it was used and discarded (i.e., obsidian gathered from islands inaccessible from the mainland without the use of boats). This article takes as its starting position the likelihood that watercraft technologies were among transportation and mobility options employed during early explorations and settlements ot the Americas. While early colonisation models increasingly envision possible maritime travel, they are relatively mute on possible uses tor watercraft as aids in inland exploration, mobility, and settlement. This paper draws ideas from examinations ot ethnographic and archaeological records to provide a springboard for expanding mobility models beyond their present tendency to view pedestrian travel as the dominant, it not nearly exclusive, mode of inland movement in late-Pleistocene America.

Meltzer 1997

David J. Meltzer, *Monte Verde and the Pleistocene Peopling of the Americas*. science **276** (1997), 754–755.

Owsley 2005

Douglas W. Owsley & Richard L. Jantz, *Nearsightedness in Paleoamerican Research, Historical Perspective and Contemporary Analysis*. In: Robson Bonnichsen, Bradley T. Lepper, Dennis Stanford & Michael R. Waters (Hrsg.), *Paleoamerican Origins, Beyond Clovis*. Peopling of the Americas (College Station 2005), 289–294.

Both increased analytical capability and compilation of an extensive reference database for morphometric research enable the testing ot old ideas versus new theories regarding the origin of the First Americans. Measurements from four ancient skulls—Browns Valley, Minnesota Woman, Spirit Cave, and Wizards Beach—are compared with corresponding data for 34 population samples including nine Native American groups from the western half of North America. The craniofacial morphology of Browns Valley and Minnesota Woman are quite similar; together with Spirit Cave, they fall outside the range of variation of all modern groups,

especially that of American Indians. This interpretation is very different from the traditional view ot relatedness and close morphological similarity championed by Hrdlička more than half a century ago. Historical perspective focusing on differing interpretations of Minnesota Woman reaffirms the need for farsightedness in determining the disposition of ancient remains in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA). Preservation of culturally unaffili-ated human remains for future study is essential for advancing knowledge of ancient American prehistory.

Anthropologie

Clarke 1995

Ronald J. Clarke & Phillip V. Tobias, *Sterkfontein Member 2 Foot Bones of the Oldest South African Hominid*. science **269** (1995), 521–524.

Four articulating hominid foot bones have been recovered from Sterkfontein Member 2, near Johannesburg, South Africa. They have human features in the hindfoot and strikingly apelike traits in the forefoot. While the foot is manifestly adapted for bipedalism, its most remarkable characteristic is that the great toe (hallux) is appreciably medially diverged (varus) and strongly mobile, as in apes. Possibly as old as 3.5 million years, the foot provides the first evidence that bipedal hominids were in southern Africa more than 3.0 million years ago. The bones probably belonged to an early member of Australopithecus africanus or another early hominid species.

Harcourt-Smith 2004

W. E. H. Harcourt-Smith & L. C. Aiello, *Fossils, feet and the evolution of human bipedal locomotion*. Journal of Anatomy **204** (2004), 403–416.

We review the evolution of human bipedal locomotion with a particular emphasis on the evolution of the foot. We begin in the early twentieth century and focus particularly on hypotheses of an ape-like ancestor for humans and human bipedal locomotion put forward by a succession of Gregory, Keith, Morton and Schultz. We give consideration to Morton's (1935) synthesis of foot evolution, in which he argues that the foot of the common ancestor of modern humans and the African apes would be intermediate between the foot of Pan and Hylobates whereas the foot of a hypothetical early hominin would be intermediate between that of a gorilla and a modern human. From this base rooted in comparative anatomy of living primates we trace changing ideas about the evolution of human bipedalism as increasing amounts of postcranial fossil material were discovered. Attention is given to the work of John Napier and John Robinson who were pioneers in the interpretation of Plio-Pleistocene hominin skeletons in the 1960s. This is the period when the wealth of evidence from the southern African australopithecine sites was beginning to be appreciated and Olduvai Gorge was revealing its first evidence for Homo habilis. In more recent years, the discovery of the Laetoli footprint trail, the AL 288-1 (A. afarensis) skeleton, the wealth of postcranial material from Koobi Fora, the Nariokotome Homo ergaster skeleton, Little Foot (Stw 573) from Sterkfontein in South Africa, and more recently tantalizing material assigned to the new and very early taxa Orrorin tugenensis, Ardipithecus ramidus and Sahelanthropus tchadensis has fuelled debate and speculation. The varying interpretations based on this material, together with changing theoretical insights and analytical approaches, is discussed and assessed in the context of new three-dimensional

morphometric analyses of australopithecine and Homo foot bones, suggesting that there may have been greater diversity in human bipedalism in the earlier phases of our evolutionary history than previously suspected.
Keywords: Australopithecus; bipedal locomotion; evolution of the foot; Homo; human evolution.

Hunt 1994

Kevin D. Hunt, *The evolution of human bipedality, Ecology and functional morphology*. Journal of Human Evolution **26** (1994), 183–202.
Contexts thai elicit bipedalism in extant apes may provide evidence of the selective pressures that led to hominid bipedalism. Bipedalism was observed most commonly among chimpanzees when they fed on the small fruits of diminutive, open-forest trees. Chimpanzees fed bipedally from such trees either by reaching up to pick fruit while standing on the ground, or from within the tree, in which ease bipedalism was frequently stabilized by grasping an overhead branch. The food-gathering function of chimpanzee bipedalism suggests that hominid bipedalism may have evolved in conjunction with arm-hanging as a specialized feeding adaptation that allowed for efficient harvesting of fruits among open-forest or woodland trees. Such evidence is particularly valuable when it is in accord with fossil anatomy. Australopithecus afarensis has features of the hand, shoulder and torso that have been related to arm-hanging in chimpanzees. The australopithecine hip and hind limb clearly indicate bipedalism, but also indicate a less than optimal adaptation to bipedal locomotion compared to modern humans. Locomotor inefficiency supports the hypothesis chat bipedalism evolved more as a terrestrial feeding posture than as a walking adaptation. A bipedal postural feeding adaptation may have been a preadaptation for the fully realized locomotor bipedalism apparent in Homo erectus.

Ruff 2013

C. C. Ruff, G. Ugazio & E. Fehr, *Changing Social Norm Compliance with Noninvasive Brain Stimulation*. science **342** (2013), 482–484.
s342-0482-Supplement.pdf
All known human societies have maintained social order by enforcing compliance with social norms. The biological mechanisms underlying norm compliance are, however, hardly understood. We show that the right lateral prefrontal cortex (rLPFC) is involved in both voluntary and sanction-induced norm compliance. Both types of compliance could be changed by varying the neural excitability of this brain region with transcranial direct current stimulation, but they were affected in opposite ways, suggesting that the stimulated region plays a fundamentally different role in voluntary and sanction-based compliance. Brain stimulation had a particularly strong effect on compliance in the context of socially constituted sanctions, whereas it left beliefs about what the norm prescribes and about subjectively expected sanctions unaffected. Our findings suggest that rLPFC activity is a key biological prerequisite for an evolutionarily and socially important aspect of human behavior.

Stearns 2010

Stephen C. Stearns, Sean G. Byars, Diddahally R. Govindaraju & Douglas Ewbank, *Measuring selection in contemporary human populations*. Nature Reviews Genetics **11** (2010), 611–622.
Are humans currently evolving? This question can be answered using data on lifetime reproductive success, multiple traits and genetic variation and covariation in

those traits. Such data are available in existing long-term, multigeneration studies — both clinical and epidemiological — but they have not yet been widely used to address contemporary human evolution. Here we review methods to predict evolutionary change and attempts to measure selection and inheritance in humans. We also assemble examples of long-term studies in which additional measurements of evolution could be made. The evidence strongly suggests that we are evolving and that our nature is dynamic, not static.

Underhill 2001

P. A. Underhill et al., *The phylogeography of Y chromosome binary haplotypes and the origins of modern human populations*. Annals of Human Genetics **65** (2001), 43–62.

P. A. Underhill, G. Passarino, A. A. Lin, P. Shen, M. Mirazón Lahr, R. A. Foley, P. J. Oefner & L. L. Cavalli-Sforza

Although molecular genetic evidence continues to accumulate that is consistent with a recent common African ancestry of modern humans, its ability to illuminate regional histories remains incomplete. A set of unique event polymorphisms associated with the non-recombining portion of the Y-chromosome (NRY) addresses this issue by providing evidence concerning successful migrations originating from Africa, which can be interpreted as subsequent colonizations, diåerentiations and migrations overlaid upon previous population ranges. A total of 205 markers identiÆed by denaturing high performance liquid chromatography (DHPLC), together with 13 taken from the literature, were used to construct a parsimonious genealogy. Ancestral allelic states were deduced from orthologous great ape sequences. A total of 131 unique haplotypes were deÆned which trace the microevolutionary trajectory of global modern human genetic diversiÆcation. The genealogy provides a detailed phylogeographic portrait of contemporary global population structure that is emblematic of human origins, divergence and population history that is consistent with climatic, paleoanthropological and other genetic knowledge.

Vaughan 2003

Christopher L. Vaughan, *Theories of bipedal walking: an odyssey, Keynote Lecture XVIIIth ISB, Zürich, Switzerland, 2001*. Journal of Biomechanics **36** (2003), 513–523.

In this paper six theories of bipedal walking, and the evidence in support of the theories, are reviewed. They include: evolution, minimising energy consumption, maturation in children, central pattern generators, linking control and effect, and robots on two legs. Specifically, the six theories posit that: (1) bipedalism is the fundamental evolutionary adaptation that sets hominids—and therefore humans—apart from other primates; (2) locomotion is the translation of the centre of gravity along a pathway requiring the least expenditure of energy; (3) when a young child takes its first few halting steps, his or her biomechanical strategy is to minimise the risk of falling; (4) a dedicated network of interneurons in the spinal cord generates the rhythm and cyclic pattern of electromyographic signals that give rise to bipedal gait; (5) bipedal locomotion is generated through global entrainment of the neural system on the one hand, and the musculoskeletal system plus environment on the other; and (6) powered dynamic gait in a bipedal robot can be realised only through a strategy which is based on stability and real-time feedback control. The published record suggests that each of the theories has some measure of support. However, it is important to note that there are other important theories of locomotion which have not been covered in this review. Despite such omissions, this odyssey has explored the wide spectrum of bipedal walking,

from its origins through to the integration of the nervous, muscular and skeletal systems.
Keywords: Gait theories; Bipedal walking

Bibel

Allen 2011
John J. Allen, *The Mixed Economies of Cain and Abel, An Historical and Cultural Approach*. Conversations with the Biblical World **31** (2011), 33–52.
This paper seeks to address the problem of divine capriciousness in the Cain and Abel story by a greater appreciation of ancient Jewish exegesis along with an anthropological perspective of pastoral-nomads and sedentary agriculturalists. Through this emphasis on the occupationspecific offerings, the interpretive focus shifts from sibling jealousy and rivalry to the sacrificial acts. This project aims at exposing how varying subsistence models can affect the dispositional approach to sacrifice, which in turn causes one sacrifice to be rejected and the other received.

Botta 2008
Alejandro F. Botta, *How long does an eternal covenant last?* **עולם** *in the light of Aramaic-Egyptian legal documents*. The Bible Translator **59** (2008), 158–163.

Gnanaraj 2012
D. Gnanaraj, *Fire from Heaven? Archeological light on the destruction of Sodom and Gomorrah (Genesis 19: 23–28)*. New Life Review **1** (2012), 1–12.
The debate on the Biblical claim that Sodom and Gomorrah was destroyed by fire from heaven has recently intensified in academic circles. This debate is centered on two areas: on the very existence of Cities of the Plain which includes Sodom and Gomorrah and the manner of their destruction. This article reviews various archeological proposals on the location of Sodom and Gomorrah and attempts to reconstruct the scene of destruction based on the available historical-archeological information.

Grabung

Dillehay 1989
Tom D. Dillehay (Hrsg.), *Monte Verde – A Late Pleistocene Settlement in Chile, Vol. 1 Palaeoenvironment and Site Context*. Smithsonian Series in Archaeological Inquiry (Washington 1989).

Dillehay 1997
Tom D. Dillehay (Hrsg.), *Monte Verde – A Late Pleistocene Settlement in Chile, Vol. 2 The Archaeological Context and Interpretation*. Smithsonian Series in Archaeological Inquiry (Washington 1997).

George 2005

Debra George, John Southon & R. E. Taylor, *Resolving an anomolous radiocarbon determination on mastodon bone from Monte Verde, Chile*. American Antiquity **70** (2005), 766–772.

Previous 14C determinations obtained on two segments of a single mastodon bone recovered from Monte Verde, Chile, were highly discordant, differing by more than 5,000 years. Because of the significance of this site in discussions concerning the earliest peopling of the Western Hemisphere, additional 14C and new d13C values have been obtained on organic fractions isolated from both segments. The constituent amino acid profiles indicate that both bone segments retain significant amounts of protein (mostly collagen) residues. Four accelerator mass spectrometry-based 14C values obtained on total amino acids and ultrafiltered gelatin fractions – two from each segment – are statistically identical and indicate an age of 12,460 (± 30) BP for the mastodon. This value is concordant with 14C values obtained on other culturally affiliated organics associated with the MV-II levels at this site.

Taylor 1999

R. E. Taylor, C. Vance Haynes Jr., Donna L. Kirner & John R. Southon, *Radiocarbon analyses of modern organics at Monte Verde, Chile, No evidence for a local reservoir effect*. American Antiquity **64** (1999), 455–460.

Radiocarbon measurements have been obtained on contemporary plant samples collected at the site of Monte Verde, Chile, to examine the possibility that a local 14C reservoir effect impinges on the accuracy of the 14C values obtained on previously recovered archaeological samples. The 14C activity of the modern plants do not reveal any offset from expected contemporary 14C values and thus provide no support for a major postulated reservoir effect at least for the recent past. Although there is, at present, no direct means of measuring potential 14C reservoir offsets in the late Pleistocene for this region, we are not aware of any current data that would indicate that there have been major changes during geologically recent times.

Tuross 1995

Noreen Tuross & Tom D. Dillehay, *The Mechanism of Organic Preservation at Monte Verde, Chile, and One Use of Biomolecules in Archaeological Interpretation*. Journal of Field Archaeology **22** (1995), 97–110.

Monte Verde, a habitation site in southern Chile, is the source of exceptionally well-preserved organic materials. The depositional and chemical circumstances that led to the persistence of this unique assemblage included an anoxic, reducing environment protected by an overlying peat layer and a silica gel-rich substrate. Utilizing the immunological techniques of ELISA assays and Western blots, a subset of lithic artifacts was tested for blood traces. Geochemical analysis of the soil matrix provided the necessary comparative data for assessing the biological etiology of the residue extracted from these tools. One tool was found to be positive for hemoglobin, and was convincingly above both the chemical and geological background of the immunological assays. These findings complement the archaeological interpretation of the site.

Grundlagen

Surovell 2000

Todd A. Surovell, *Early Paleoindian women, children, mobility, and fertility*. American Antiquity **65** (2000), 493–508.

If we take the archaeological record at face value, the colonization of unglaciated North America appears to have been very rapid. The highly consistent dating of Clovis archaeological sites (11,500-10,800 B.P) suggests that this continent was populated within a matter of centuries. To explain the spatial and temporal scales of this phenomenon, it is necessary to invoke both high mobility and high fertility rates during the initial colonization process. However, it is widely believed that it is maladaptive for mobile foragers to have large numbers of offspring due to the costs of transporting those children. Thus, the archaeological record presents us with a paradox. Using a mathematical model that estimates the costs of raising children for mobile hunter-gatherers, this paper asks the question—is high mobility compatible with high fertility? It is concluded that high mobility, if defined as the frequent movement of residential base camps, is quite compatible with high fertility, and that early Paleoindians could indeed have been characterized by high reproductive rates. Therefore, it is quite possible that the Americas were populated very rapidly by highly mobile hunter-gatherers.

Isotope

Bollongino 2013

Ruth Bollongino et al., *2000 Years of Parallel Societies in Stone Age Central Europe*. science **342** (2013), 479–481.

s342-0479-Supplement.pdf

Ruth Bollongino, Olaf Nehlich, Michael P. Richards, Jörg Orschiedt, Mark G. Thomas, Christian Sell, Zuzana FajkoŬová, Adam Powell & Joachim Burger

Debate on the ancestry of Europeans centers on the interplay between Mesolithic foragers and Neolithic farmers. Foragers are generally believed to have disappeared shortly after the arrival of agriculture. To investigate the relation between foragers and farmers, we examined Mesolithic and Neolithic samples from the Blätterhöhle site. Mesolithic mitochondrial DNA sequences were typical of European foragers, whereas the Neolithic sample included additional lineages that are associated with early farmers. However, isotope analyses separate the Neolithic sample into two groups: one with an agriculturalist diet and one with a forager and freshwater fish diet, the latter carrying mitochondrial DNA sequences typical of Mesolithic hunter-gatherers. This indicates that the descendants of Mesolithic people maintained a foraging lifestyle in Central Europe for more than 2000 years after the arrival of farming societies.

Judentum

Hezser 2013

Catherine Hezser, *The Jesus Movement as a 'Popular' Judaism for the Unlearned*. In: Petra von Gemünden, David G. Horrell & Max Küchler (Hrsg.), *Jesus – Gestalt und Gestaltungen, Rezeptionen des Galiläers in Wissenschaft, Kirche und Gesellschaft*.

Novum Testamentum et Orbis Antiquus 100 (Göttingen 2013), 79–104.

Many books and articles have been written about the "Judaisms" of the late Second Temple period and the emergence of the rabbinic movement after 70 CE. While the Temple was still standing, the sacrificial service conducted by the Temple priests would have constituted the "official" religion, which few Jews would have rejected entirely. Yet the Temple service would have rarely affected ordinary Jews' daily lives. It would have formed the background for a variety of supplementary beliefs and practices, which brought Judaism closer to people's homes, families, and everyday concerns. The Jesus movement seems to have been a form of popular Judaism which offered personal salvation to people irrespective of their scholarly proficiency. In the following we shall juxtapose Jesus' "popular Judaism" with the scholastic model of Pharisees and rabbis and view both in the context of widespread illiteracy in ancient Judaism of the first centuries CE.

Klima

O'Connell 2013

Michael O'Connell, Beatrice Ghilardi & Liam Morrison, *A 7000-year record of environmental change, including early farming impact, based on lake-sediment geochemistry and pollen data from County Sligo, western Ireland*. Quaternary Research (2013), preprint, 1–15. DOI:10.1016/j.yqres.2013.10.004.

Detailed, chronologically tightly constrained, lake-sediment-based geochemical and pollen records have enabled local changes in soil erosion, woodland cover and composition, and prehistoric farming impact to be reconstructed in considerable detail. The profile opens shortly after 7800 BC when tall canopy trees were well-established and presumably in equilibrium with their environment. A distinct perturbation that involved an increase in pine and birch, a decrease in oak and a minor opening-up of the woodland is regarded as the local expression of the 8.2 ka climate anomaly. Lack of response in the geochemical erosional indicators is interpreted as evidence for drier conditions. A short-lived, over-compensation in climate recovery followed the 8.2 ka event. Neolithic farming impact is clearly expressed in both the pollen and geochemical data. Both datasets indicate that Neolithic impact was concentrated in the early Neolithic (3715–3440 BC). In the interval 3000–2700 BC there appears to have been a break in farming activity. The pollen data suggest substantially increased farming impact (both arable and pastoral) in the Bronze Age, with maximum farming and woodland clearances taking place in the late Bronze Age (1155–935 BC). These developments are poorly expressed in the geochemical record, possibly due to within-lake changes.

Keywords: Geochemistry | Pollen analysis | Paleoecology | Human impact | Climate change | Neolithic | Bronze Age | Ireland

Kultur

Alesina 2013

Alberto Alesina, *Women, Fertility, and the Rise of Modern Capitalism*. science **342** (2013), 427–428.

How did the Black Plague change work and family opportunities for women?
In the aftermath of the plague, labor became a scarce resource, whereas land became abundant. Technology shifted to land-intensive practices. The scarcity of labor

sparked an increase in wages, but it also created many employment opportunities for women. For instance, land-intensive pastoral activities increased their share in agricultural output and allowed the participation of women in the labor force. Young women and girls were needed in the field. As a result, the age of marriage increased and fertility decreased, slowing the recovery of a European population already decimated by the Black Death. The average marriage age of women increased from the late teens before the Black Death to the early mid-20's in the centuries that followed.

Brown 2013

Steven Brown, Patrick E. Savage, Albert Min-Shan Ko, Mark Stoneking, Ying-Chin Ko, Jun-Hun Loo & Jean A. Trejaut, *Correlations in the population structure of music, genes and language*. Proc. Royal Society B (2013), preprint, 1–7. DOI:10.1098/rspb.2013.2072.

ProcRSocB2013-p1113-Supplement1.pdf, ProcRSocB2013-p1113-Supplement2.pdf, ProcRSocB2013-p1113-Supplement3.pdf, ProcRSocB2013-p1113-Supplement4.pdf, ProcRSocB2013-p1113-Supplement5.pdf, ProcRSocB2013-p1113-Supplement6.pdf

We present, to our knowledge, the first quantitative evidence that music and genes may have coevolved by demonstrating significant correlations between traditional group-level folk songs and mitochondrial DNA variation among nine indigenous populations of Taiwan. These correlations were of comparable magnitude to those between language and genes for the same populations, although music and language were not significantly correlated with one another. An examination of population structure for genetics showed stronger parallels to music than to language. Overall, the results suggest that music might have a sufficient time-depth to retrace ancient population movements and, additionally, that it might be capturing different aspects of population history than language. Music may therefore have the potential to serve as a novel marker of human migrations to complement genes, language and other markers.

Subject Areas: evolution, genetics

Keywords: music, genes, language, population structure, coevolution, Taiwan

Mathematik

Pöppe 2013

Christoph Pöppe, *Leben in 10 000 Dimensionen*. Spektrum der Wissenschaft **2013**, xii, 75–79.

Die mathematischen Formeln sind dieselben wie in unserem gewohnten Raum. Aber wenn man 10000 verschiedene Richtungen zur Verfügung hat, die sämtlich aufeinander senkrecht stehen, kommen statistische Effekte ins Spiel – mit den merkwürdigsten Folgen.

Aus einem in [einer] Sprache verfassten Dokument gewinnen wir einen Vektor im Sprachraum, indem wir auszählen, wie oft jedes Wort vorkommt. Zwei Dokumente gelten dann als ähnlich, wenn ihre Vektoren nah benachbart sind – ein grobes Maß für Ähnlichkeit, weil es jeden Zusammenhang zwischen den Wörtern eines Textes ignoriert, aber gut genug für Computerprogramme wie den Suchalgorithmus von Google.

Methoden

Buchanan 2013

Briggs Buchanan & Mark Collard, *A geometric morphometrics-based assessment of blade shape differences among Paleoindian projectile point types from western North America.* Journal of Archaeological Science **37** (2013), 350–359.

Blade shape features in the type definitions of Clovis, Folsom, and Plainview projectile points. However, the accuracy of these assessments has never been evaluated. Here we report a study in which geometric morphometrics and multivariate statistics were used to compare the shapes of the blades of Clovis, Folsom and Plainview points from the Southern Plains of North America. In the course of the analyses, we controlled for the impact of three potential confounding factors: allometry, differences in raw material quality, and resharpening. The analyses show that blade shape distinguishes Clovis points from both Folsom points and Plainview points, but does not distinguish Folsom points from Plainview points. The analyses also show that the similarities and differences in blade shape among the types are independent of allometry, raw material quality, and resharpening. These findings suggest that the type definitions for Clovis, Folsom and Plainview need to be altered. They also have implications for typing specimens that lack other defining characters (e.g. channel flakes, flutes). Lastly, the absence of resharpening effects raises questions about the validity of the reduction thesis.

Keywords: Projectile points | Paleoindian | Geometric morphometrics | Blade shape | Resharpening | Raw material quality | Reduction thesis

Sholts 2013

Sabrina B. Sholts, Dennis J. Stanford, Louise M. Flores & Sebastian K. T. S. Wärmländer, *Flake scar patterns of Clovis points analyzed with a new digital morphometrics approach, Evidence for direct transmission of technological knowledge across early North America.* Journal of Archaeological Science **39** (2013), 3018–3026.

JArchSci39-3018-Supplement.pdf

Clovis points are the principal diagnostic artifacts of a Clovis complex that spread across North America between ca. 11,050–10,800 radiocarbon years before present. Clovis may be the best documented Paleoamerican culture in North America, but much remains to be learned about the movement and interactions of Clovis peoples. Similarities among Clovis points from geographically diverse locations have led some researchers to suggest that a uniform projectile point technology existed across North America during Clovis times. Others have rejected this idea, proposing local and independent technological adaptations to different regional environments. To investigate these ideas, we used digital morphometrics to analyze 50 Clovis points from nine different contexts. First, 3D surface models of the points were created with a portable laser scanner. Next, these models were digitally cross-sectioned through both faces, yielding two-dimensional isoheight contours of flake scar patterns that reflect the original reduction techniques used to shape the projectile points. In the final step, the contours were transformed with elliptic Fourier analysis into Fourier coefficient series, and patterns of variation and symmetry were explored with principal components analysis. When compared to modern Clovis point replicas made by an expert knapper, the flake scar contours of the ancient Clovis points showed little morphological variation and a large degree of bifacial symmetry. Our results support the existence of a widespread

standardized “Clovis” knapping technique, most likely transmitted through direct interaction between knappers from different groups.
Keywords: Lithic technology | Pleistocene | Paleoindians | 3D scanning | Contour analysis | Morphology

Physik

Wenz 2013

A. N. Wenz, G. Zürn, S. Murmann, I. Brouzos, T. Lompe & S. Jochim, *From Few to Many: Observing the Formation of a Fermi Sea One Atom at a Time*. science **342** (2013), 457–460.
s342-0457-Supplement.pdf
Knowing when a physical system has reached sufficient size for its macroscopic properties to be well described by many-body theory is difficult. We investigated the crossover from few- to many-body physics by studying quasi–one-dimensional systems of ultracold atoms consisting of a single impurity interacting with an increasing number of identical fermions. We measured the interaction energy of such a system as a function of the number of majority atoms for different strengths of the interparticle interaction. As we increased the number of majority atoms one by one, we observed fast convergence of the normalized interaction energy toward a many-body limit calculated for a single impurity immersed in a Fermi sea of majority particles.

Story or Book

Radford 2013

Tim Radford, *Us and them*. nature **503** (2013), 34–35.
Tim Radford contemplates three fascinating studies on what it means to be human.
The Accidental Species: Misunderstandings of Human Evolution. Henry Gee. University of Chicago Press: 2013.
The Accidental Species is discursive, rich in good stories and terrible jokes, and a salutary reminder of how little we know.
For Gee, gate-keeper of the palaeontological papers in this journal, bipedalism is just one change among many — one peculiar posture adopted by a group of animals. He notes in The Accidental Species that the posture is seen nowhere else, “but one could say the same for knuckle walking in chimps and gorillas, brachiation in gibbons, and the four-handed swing of orangutans”.

Radford 2013

Tim Radford, *Us and them*. nature **503** (2013), 34–35.
Tim Radford contemplates three fascinating studies on what it means to be human.
The Gap: The Science of What Separates Us from Other Animals. Thomas Suddendorf. Basic Books: 2013.
The Gap is ideal for someone who already has a decent collection about human evolution. Suddendorf is more concerned with the things we can learn from other surviving primates. Yes, apes cooperate, communicate, use tools, share knowledge, solve problems, demonstrate self-awareness and display emotions. But he carefully leaves open the big question: how much can you conclude from each case study?

Both Suddendorf and Lieberman directly address the question of natural selection in a world in which humans have seemingly taken control of nature, and ensured the survival of the not-so-fit. Puzzlingly, says Suddendorf, "the rich, successful, powerful, beautiful, and well-educated people seem to breed less, not more, than most of the rest of us". But he suspects humans could find more dramatic ways of cutting short their own success story, with a little help from war and famine.

Radford 2013

Tim Radford, *Us and them*. nature **503** (2013), 34–35.

Tim Radford contemplates three fascinating studies on what it means to be human.

The Story of the Human Body: Evolution, Health and Disease. Daniel E. Lieberman. Pantheon: 2013.

The Story of the Human Body is a readable introduction to the whole field and great on the making of our physicality.

For the evolutionary biologist and barefoot runner Lieberman, however, bipedalism was a "monumental and consequential" shift. The two-legs-good, four-legs-bad effect is discussed on at least 40 pages of The Story of the Human Body; running, too, gets a good show. We are what we are because our bodies could do what they did. The legs of Homo erectus were 10–20 % longer than those of the hominin Australopithecus, which meant the first humans could cover great distances at a lower energy cost. But longer legs make arboreal life difficult, so once humans got moving, they had to stay on the road.

Lieberman would have us get up off our chairs, set down our books and chew tough fibrous stuff: our bodies may not be the best of all possible bodies, but they are the only ones we have, and we should look after them.