

Literatur

Afrika

BOSTOEN 2007

Koen Bostoen, *Pots, Words and the Bantu Problem: On Lexical Reconstruction and Early African History*. [Journal of African History](#) **48** (2007), 173–199.

Historical-comparative linguistics has played a key role in the reconstruction of early history in Africa. Regarding the ‘Bantu Problem’ in particular, linguistic research, particularly language classification, has oriented historical study and been a guiding principle for both historians and archaeologists. Some historians have also embraced the comparison of cultural vocabularies as a core method for reconstructing African history. This paper evaluates the merits and limits of this latter methodology by analysing Bantu pottery vocabulary. Challenging earlier interpretations, it argues that speakers of Proto-Bantu inherited the craft of pot-making from their Benue-Congo-speaking ancestors who introduced this technology into the Grassfields region. This ‘Proto-Bantu ceramic tradition’ was the result of a long, local development, but spread quite rapidly into Atlantic Central Africa, and possibly as far as Southern Angola and northern Namibia. The people who brought Early Iron Age (EIA) ceramics to southwestern Africa were not the first Bantu-speakers in this area nor did they introduce the technology of pot-making.

KEY WORDS: Archaeology, Bantu origins, linguistics.

CLIST 2006

Bernard Clist, *Mais où se sont taillées nos pierres en Afrique Centrale entre 7.000 et 2.000 bp?* In: HANS-PETER WOTZKA (Hrsg.), *Grundlegungen: Beiträge zur europäischen und afrikanischen Archäologie, Festschrift für Manfred K. H. Eggert*. (Tübingen 2006), 291–302.

Nous venons de le voir, s’il existe une caractéristique majeure des ensembles culturels de la seconde moitié de l’Holocène en Afrique Centrale, c’est bien l’existence d’une mosaïque de groupes humains, la juxtaposition dans l’espace de modes de production différents. Déjà proposée dès 1991 dans le premier ouvrage de synthèse régionale en français (Lanfranchi & Clist 1991), cette hypothèse s’est vue confirmée au fil du temps par la faible vitesse des recherches archéologiques. On distingue aujourd’hui dans le nord de l’Afrique Centrale les Grassfields du Cameroun où la taille de la pierre tient un rôle important et ne disparaît pas après 2.000 bp, l’ouest de la Centrafrique où la taille de la pierre tient une place privilégiée mais est abandonnée après 2.600 bp, et enfin les industries forestières qui immédiatement se reportent sur une autre stratégie pour obtenir leurs outils et délaissent, sans complètement l’abandonner, la taille de la pierre. Exception faite du sud-Cameroun où il n’existe pas de discontinuité dans les productions céramiques néolithiques (dite Oboboguien I) et Age du Fer (dite Oboboguien II), et où la taille de la pierre coexiste avec la production locale d’objets et outils en fer, partout ailleurs l’apparition d’une production locale d’artefacts en fer correspond à une discontinuité majeure dans la production céramique et à la disparition de l’outillage taillé.

EGGERT 2006

Manfred K. H. Eggert, Alexa Hohn, Stefanie Kahlheber, Conny Meister, Katharina Neumann & Astrid Schweizer, *Pits, graves and grains: Archaeological*

and archaeobotanical research in southern Cameroon. [Journal of African Archaeology 4 \(2006\), 273–298.](#)

Since 2003, a joint research project of the universities of Frankfurt and Tubingen (Germany) has explored the changing interrelationship of environment and culture in the forest-savanna regions of West and Central Africa. This paper provides the first archaeological and archaeo-botanical results of three field seasons in the rainforest of southern Cameroun. Excavations were carried out at Bwambe Hill in the vicinity of Kribi at the Atlantic coast as well as at Akoneteye, Minyin and Abang Minko'o, all located in the hinterland near Ambam. At all sites a number of pit structures, which contained mostly ceramics, were excavated. In addition, at Akoneteye two graves with rich ceramic and iron offerings were unearthed. They seem to be the oldest graves with iron objects yet known in Central Africa.

A large body of archaeobotanical material was retrieved from the structures excavated (charcoal fragments, charred fruits and seeds, phytolith and starch samples). Of high importance is the presence of pearl millet (*Pennisetum glaucum*) at Bwambe Hill and Abang Minko'o in archaeological contexts dated to about 2200 bp. Charcoal and pollen data indicate that the ancient settlements were situated in a closed rainforest which was, however, massively disturbed and partly substituted by pioneer plant formations.

Keywords: Central Africa, rainforest, iron objects, burials, food production, pearl millet

FILIPPO 2011

Cesare de Filippo et al., *Y-Chromosomal Variation in Sub-Saharan Africa: Insights Into the History of Niger-Congo Groups.* [Molecular Biology and Evolution 28 \(2011\), 1255–1269.](#)

Cesare de Filippo, Chiara Barbieri, Mark Whitten, Sununguko Wata Mpoloka, Ellen Drofn Gunnarsdóttir, Koen Bostoen, Terry Nyambe, Klaus Beyer, Henning Schreiber, Peter de Knijff, Donata Luiselli, Mark Stoneking and Brigitte Pakendorf

Technological and cultural innovations as well as climate changes are thought to have influenced the diffusion of major language phyla in sub-Saharan Africa. The most widespread and the richest in diversity is the Niger-Congo phylum, thought to have originated in West Africa ;10,000 years ago (ya). The expansion of Bantu languages (a family within the Niger-Congo phylum) \approx 5,000 ya represents a major event in the past demography of the continent. Many previous studies on Y chromosomal variation in Africa associated the Bantu expansion with haplogroup E1b1a (and sometimes its sublineage E1b1a7). However, the distribution of these two lineages extends far beyond the area occupied nowadays by Bantu-speaking people, raising questions on the actual genetic structure behind this expansion. To address these issues, we directly genotyped 31 biallelic markers and 12 microsatellites on the Y chromosome in 1,195 individuals of African ancestry focusing on areas that were previously poorly characterized (Botswana, Burkina Faso, Democratic Republic of Congo, and Zambia). With the inclusion of published data, we analyzed 2,736 individuals from 26 groups representing all linguistic phyla and covering a large portion of sub-Saharan Africa. Within the Niger-Congo phylum, we ascertain for the first time differences in haplogroup composition between Bantu and non-Bantu groups via two markers (U174 and U175) on the background of haplogroup E1b1a (and E1b1a7), which were directly genotyped in our samples and for which genotypes were inferred from published data using linear discriminant analysis on short tandem repeat (STR) haplotypes. No reduction in STR diversity levels was found across the Bantu groups, suggesting the absence of serial founder effects. In addition, the homogeneity of haplogroup composition and pattern of haplotype sharing between Western and Eastern Bantu groups suggests that their expansion throughout sub-Saharan Africa reflects a rapid spread followed by backward and forward migrations. Overall, we found that linguistic affiliations played a notable role in shaping sub-Saharan African Y chromosomal diversity, although the impact of geography is clearly discernible.

Key words: human, language, geography, migration, Y chromosome, Bantu.

GONZÁLEZ-RUIBAL 2011

Alfredo González-Ruibal, Llorenç Picornell Gelabert & Alba Valenciano Mañé, *Early Iron Age Burials from Equatorial Guinea: The Sites of Corisco Island*. *Journal of African Archaeology* **9** (2011), 41–66.

During a survey undertaken on the Island of Corisco, also known as Mandji (Equatorial Guinea), in 2009, several sites of the Early and Late Iron Age were recorded. The most spectacular discoveries are three burial sites, the largest of which has yielded several intact tombs with many artefacts (axes, spears, anklets, bracelets, complete pots) radiocarbon dated to 410-640 cal AD. Objects, structures and ritual activities are similar to those documented in Early Iron Age cemeteries in Cameroon in recent years. The new data from Corisco contribute to change the image of the early iron-using societies in Equatorial Africa.

Keywords: Early Iron Age, Central Africa, Gulf of Guinea, equatorial forest, burial customs, ancient metallurgy, islands

KAHLHEBER 2009

Stefanie Kahlheber, Koen Bostoen & Katharina Neumann, *Early plant cultivation in the central African rain forest: First millennium BC pearl millet from south Cameroon*. *Journal of African Archaeology* **7** (2009), 253–272.

The Bantu expansion, a major topic in African archaeology and history, is widely assumed to correlate with the spread of farming, but archaeological data on the subsistence of these putative early Bantu speakers are very sparse. However, finds of domesticated pearl millet (*Pennisetum glaucum*) in southern Cameroonian archaeological sites, dated between 400 and 200 BC, open new perspectives on the history of agriculture in the Central African rainforest.

Linguistic evidence suggests that pearl millet was part of early agricultural traditions of Bantu speakers, and has to a great extent been distributed during the course of their expansion over large parts of western Bantu-speaking Africa, possibly even originally from their homeland in the Nigerian-Cameroonian borderland.

In combining archaeobotanical, palaeoenvironmental and linguistic data, we put forward the hypothesis that an agricultural system with pearl millet was brought into the rainforest during the first millennium BC, and that its spread across Central Africa coincided with the dispersal of certain Bantu language subgroups.

Keywords: *Pennisetum glaucum*, Bantu expansion, agriculture, climatic change, Iron Age

DE MARET 1989

Pierre de Maret, *Le contexte archéologique de l'expansion bantu en Afrique centrale*. In: THÉOPHILE OBENGA (Hrsg.), *Les peuples bantu migrations, expansion et identité culturelle, Colloque international, Libreville 1–6 avril 1985*. (Paris 1989), 118–138.

DE MARET 1995

Pierre de Maret, *Pits, Pots and the Far-West Streams*. *Azania* **29-30** (1995), 318–323.

MITCHELL 2010

Peter Mitchell, *Genetics and southern African prehistory: an archaeological view*. *Journal of Anthropological Sciences* **88** (2010), 73–92.

Southern African populations speaking languages that are often – but inaccurately – grouped together under the label ‘Khoisan’ are an important focus of molecular genetic research, not least in tracking the early stages of human genetic diversification. This paper reviews these studies from an archaeological standpoint, concentrating on modern human origins, the introduction of pastoralism to southern Africa and admixture between the region’s indigenous foragers and incoming Bantu-speaking farmers. To minimise confusion and facilitate correlation with anthropological, linguistic and archaeological data it emphasises the need to use ethnolinguistic labels accurately and with due regard for the particular histories of individual groups. It also stresses the geographically and culturally biased nature of the genetic studies undertaken to date, which employ data from only a few ‘Khoisan’ groups. Specific topics for which the combined deployment of genetic and archaeological methods would be particularly useful include the early history of Ju-, Hoan- and Tuu-speaking hunter-gatherers, the expansion of Khoe-speaking populations, the chronology of genetic exchange between hunter-gatherers and farmers, and the origins of the Sotho/Tswana- and Nguni-speaking populations that dominate much of southern Africa today.

Keywords: Southern Africa, Genetics, ‘Khoisan’, Archaeology, Hunter-gatherers, Pastoralism, Sotho/ Tswana, Nguni.

MONTANO 2011

Valeria Montano, Gianmarco Ferri, Veronica Marcari, Chiara Batini, Okorie Anyaele, Giovanni Destro-Bisol & David Comas, *The Bantu expansion revisited: a new analysis of Y chromosome variation in Central Western Africa*. [MolEcol](#) **20** (2011), 2693–2708.

The current distribution of Bantu languages is commonly considered to be a consequence of a relatively recent population expansion (3-5 kya) in Central Western Africa. While there is a substantial consensus regarding the centre of origin of Bantu languages (the Benue River Valley, between South East Nigeria and Western Cameroon), the identification of the area from where the population expansion actually started, the relation between the processes leading to the spread of languages and peoples and the relevance of local migratory events remain controversial. In order to shed new light on these aspects, we studied Y chromosome variation in a broad dataset of populations encompassing Nigeria, Cameroon, Gabon and Congo. Our results evidence an evolutionary scenario which is more complex than had been previously thought, pointing to a marked differentiation of Cameroonian populations from the rest of the dataset. In fact, in contrast with the current view of Bantu speakers as a homogeneous group of populations, we observed an unexpectedly high level of interpopulation genetic heterogeneity and highlighted previously undetected diversity for lineages associated with the diffusion of Bantu languages (E1b1a (M2) subbranches). We also detected substantial differences in local demographic histories, which concord with the hypotheses regarding an early diffusion of Bantu languages into the forest area and a subsequent demographic expansion and migration towards eastern and western Africa.

Keywords: Bantu languages, Central Africa, demographic expansion, Y chromosome

NEUMANN 2011

Katharina Neumann, Koen Bostoen, Alexa Höhn, Stefanie Kahlheber, Alfred Ngomanda & Barthelémy Tchiengué, *First farmers in the Central African rainforest: A view from southern Cameroon*. [Quaternary International](#) (2011) preprint, 1–10. DOI:10.1016/j.quaint.2011.03.024.

Agriculture was introduced into the Central African rainforest from the drier West African savanna, in concert with a major climatic change that amplified seasonality just after 2500 BP. The savanna crop pearl millet (*Pennisetum glaucum*), dated to 2400–2200

BP, could only be cultivated due to the development of a distinct dry season. Increasing seasonality and the replacement of mature forests by pioneer formations is indicated by *Trema orientalis* in the pollen diagram of Nyabessan after 2400 BP. However, charcoal data do not point to the existence of savannas in South Cameroon during this period, but rather to a mosaic of mature and pioneer forests. The early rainforest farmers combined the cultivation of pearl millet with the exploitation of wild oil-containing tree fruits, such as oil palm and *Canarium*. The existence of pioneer formations that can be easily cut favoured the establishment of shifting cultivation. The archaeobotanical finds fit into a linguistic scenario of West-Bantu speakers making the cultivation of pearl millet one of their food production strategies before expanding further to the South. The reconstructed inherited pearl millet vocabulary for the early phases of Bantu language history provides strong circumstantial evidence for an overlap of the major stages of the Bantu expansion with the dispersal of food production.

VAN NOTEN 1982

Francis van Noten, *The Bantu Expansion Problem*. In: FRANCIS VAN NOTEN (Hrsg.), *The Archaeology of Central Africa*. (Graz 1982), 65–67.

PAKENDORF 2011

Brigitte Pakendorf, Koen Bostoen & Cesare de Filippo, *Molecular Perspectives on the Bantu Expansion: A Synthesis*. *Language Dynamics and Change* **1** (2011), 50–88.

The expansion of Bantu-speaking peoples over large parts of sub-Saharan Africa is still a matter of debate—not only with respect to the propelling force behind it and the route(s) taken, but, also, in terms of the question whether there actually was a demographic expansion of peoples, rather than just a cultural expansion involving the spread of languages and technologies. In this paper, we provide a critical review of the extant linguistic and molecular anthropological data on Africa and discuss the insights they provide concerning the expansion itself as well as the demographic processes involved in it. Contrary to some assumptions by historians and cultural anthropologists, the genetic data speak in favor of an actual movement of peoples during the expansion of the Bantu languages over Africa, rather than a spread through language and culture shift. Furthermore, the molecular data indicate that sociocultural practices such as patrilocality and possibly even polygyny played a role in shaping the genetic diversity of Bantu-speaking peoples. These sociocultural practices might explain why, in Africa, there is a correlation between Y-chromosomal (i.e., paternal) lineages and linguistic affiliation, but not between mtDNA (maternal) lineages and language.

Keywords: Bantu languages; Bantu expansion; molecular anthropology; genetics

RICHARDS 2004

Martin Richards, Vincent Macaulay, Catherine Hill, IJngel Carracedo & Antonio Salas, *The Archaeogenetics of the Dispersals of the Bantu-speaking Peoples*. In: MARTIN JONES (Hrsg.), *Traces of ancestry, Studies in honour of Colin Renfrew*. (Cambridge 2004), 075–087.

Diamond (1997) has argued that one of the principal factors in the success of farming/language dispersals was the ability to spread along an east-west axis (see also Diamond & Bellwood 2003). It is therefore somewhat ironic that the best-attested case (apart from that of the remote Pacific, which involved virgin territory) should to such a large extent have taken place from north to south. Part of the earlier phase of the dispersal was indeed west-east, and a replacement of the subsistence base was necessary before the southwards dispersals. This seems analogous to the putative dispersal of Austronesian speakers south from Taiwan, and in that context it may be worth re-emphasizing the

huge amount of language shift that seems to have been involved at this stage in the African case. But the most dramatic phase of the Bantu dispersals is surely the push south down the coast of eastern Africa in the early centuries of the first millennium AD. In any case, whatever the outcome of studies elsewhere, it looks very much as if Renfrew's farming/language dispersal hypothesis is – in one form or another – alive and well and living in Africa.

SUTTON 1995

John E. G. Sutton, *The growth of farming and the Bantu settlement on and south of the Equator, Editor's introduction*. *Azania* **29–30** (1995), 1–14.

ZANGATO 2010

Étienne Zangato & Augustin F. C. Holl, *On the Iron Front: New Evidence from North-Central Africa*. *Journal of African Archaeology* **8** (2010), 7–23. The advent of copper and iron metallurgy is one of the most fascinating debate taking place in sub-Saharan Africa archaeology today. Challenging data, that may be accurate or not, are usually ignored or dismissed without serious consideration. Sustained long-term research is nonetheless changing our views on the development of iron metallurgy in sub-Saharan Africa. This paper presents new evidence from North-Central Africa, in the Djohong area in the Cameroons, and Ndio area in the Central African Republic, both situated in the northeastern part of the Adamawa Plateau. Iron production activities are documented to have taken place as early as 3000-2500 BC. It is the case in habitation sites like Balimbe, Betumé, and Bouboun, smelting sites like Gbabiri, and forge sites like Oboui and Gbatoro. The last two sites provide high resolution data on the spatial patterning of blacksmiths' workshops dating from 2500 to 2000 BC.

Keywords: Iron metallurgy, early forges, North Central Africa, Adamawa, Oboui, Gbatoro, Gbabiri

Aktuell

DAVIES 2011

Richard J. Davies, *Methane contamination of drinking water caused by hydraulic fracturing remains unproven*. *PNAS* **108** (2011), E871.

Furthermore, natural seepage of methane in Pennsylvania is common and led to the locating of the first oil and gas wells. Unfortunately, the analysis by Osborn et al. did not include critical measurements of CH₄ levels in the aquifers before hydraulic fracturing; therefore, some of the contamination could be historical, predating hydraulic fracturing operations.

DOBROWSKI 2011

Solomon Z. Dobrowski, Shawn M. Crimmins, Jonathan A. Greenberg, John T. Abatzoglou & Alison R. Mynsberge, *Response to Comments on "Changes in Climatic Water Balance Drive Downhill Shifts in Plant Species' Optimum Elevations"*. *science* **334** (2011), 177.

Wolf and Anderegg, Hijmans, and Stephenson and Das suggest that our findings of changes in climatic water balance driving downhill shifts in plant species distributions are flawed. We demonstrate that the conclusions these authors make are subject to the selection of methods they apply and do not provide sufficient evidence to reject our original findings.

HIJMANS 2011

Robert J. Hijmans, *Comment on “Changes in Climatic Water Balance Drive Downhill Shifts in Plant Species’ Optimum Elevations”*. [science 334 \(2011\), 177](#).

Crimmins et al. (Reports, 21 January 2011, p. 324) reported that plant species moved downhill between 1935 and 2005. They compared plot data for two time periods, ignoring that the modern plots were farther north than the historical plots. I contend that there is no support for a general downhill shift after correcting for this geographic bias.

JACKSON 2011

Robert B. Jackson, Stephen G. Osborn, Avner Vengosh & Nathaniel R. Warner, *Hydraulic fracturing remains a possible mechanism for observed methane contamination of drinking water, Reply to Davies*. [PNAS 108 \(2011\), E872](#).

The problem with our paper seems to be that we acknowledged the possibility of hydraulic fracturing playing a role. Is it possible that hydraulic fracturing increases system connectivity? It is. Is it also possible that the increasingly high pressures used in hydraulic fracturing, sometimes 1,000 atm, make leaks more likely? Perhaps. Neither is proven, and all possible explanations need more research.

In summary, we agree with Davies that our “data showed that contamination had occurred, but the association with hydraulic fractures remains unproven”. Any assertion that hydraulic fracturing is unrelated to contamination remains equally unproven. We stand by what we wrote: “More research is needed across this and other regions to determine the mechanism(s) controlling the higher methane concentrations we observed”.

STEPHENSON 2011

Nathan L. Stephenson & Adrian J. Das, *Comment on “Changes in Climatic Water Balance Drive Downhill Shifts in Plant Species’ Optimum Elevations”*. [science 334 \(2011\), 177](#).

Crimmins et al. (Reports, 21 January 2011, p. 324) attributed an apparent downward elevational shift of California plant species to a precipitation-induced decline in climatic water deficit. We show that the authors miscalculated deficit, that the apparent decline in species’ elevations is likely a consequence of geographic biases, and that unlike temperature changes, precipitation changes should not be expected to cause coordinated directional shifts in species’ elevations.

WOLF 2011

Adam Wolf & William R. L. Anderegg, *Comment on “Changes in Climatic Water Balance Drive Downhill Shifts in Plant Species’ Optimum Elevations”*. [science 334 \(2011\), 177](#).

Crimmins et al. (Reports, 21 January 2011, p. 324) presented a study that purports to show that plants in California are shifting downslope to maintain a constant water deficit. We argue that the results are limited in scope to just a handful of woody species in one part of the state and are confounded by methodological errors.

ZHU 2011

Lifeng Zhu, Qi Wu, Jiayin Dai, Shanning Zhang & Fuwen Wei, *Evidence of cellulose metabolism by the giant panda gut microbiome*. [PNAS 108 \(2011\), 17714–17719](#).

The giant panda genome codes for all necessary enzymes associated with a carnivorous digestive system but lacks genes for enzymes needed to digest cellulose, the principal

component of their bamboo diet. It has been posited that this iconic species must therefore possess microbial symbionts capable of metabolizing cellulose, but these symbionts have remained undetected. Here we examined 5,522 prokaryotic ribosomal RNA gene sequences in wild and captive giant panda fecal samples. We found lower species richness of the panda microbiome than of mammalian microbiomes for herbivores and nonherbivorous carnivores. We detected 13 operational taxonomic units closely related to Clostridium groups I and XIVa, both of which contain taxa known to digest cellulose. Seven of these 13 operational taxonomic units were unique to pandas compared with other mammals. Metagenomic analysis using ≈ 37 -Mbp contig sequences from gut microbes recovered putative genes coding two cellulose-digesting enzymes and one hemicellulose-digesting enzyme, cellulase, β -glucosidase, and xylan 1,4- β -xylosidase, in Clostridium group I. Comparing glycoside hydrolase profiles of pandas with those of herbivores and omnivores, we found a moderate abundance of oligosaccharide-degrading enzymes for pandas (36%), close to that for humans (37%), and the lowest abundance of cellulases and endohemicellulases (2%), which may reflect low digestibility of cellulose and hemicellulose in the panda's unique bamboo diet. The presence of putative cellulose-digesting microbes, in combination with adaptations related to feeding, physiology, and morphology, show that giant pandas have evolved a number of traits to overcome the anatomical and physiological challenge of digesting a diet high in fibrous matter.

Anthropologie

GIBBONS 2011

Ann Gibbons, *African Data Bolster New View Of Modern Human Origins. science* **334** (2011), 167.

Indeed, "if interbreeding happened outside of Africa," as the complete genomes of Neandertals and Denisovans suggest, "it is quite likely it also happened within Africa," says population geneticist Laurent Excoffier of the University of Bern in Switzerland. But he says Hammer's team needs to do more modeling to see if conditions such as population bottlenecks could produce the same genetic patterns without interbreeding. Geneticist Sarah Tishkoff of the University of Pennsylvania would like whole-genome analyses, which Hammer says are in the works. Still, Tishkoff says, "it looks increasingly possible that there's been some low level of admixture" in Africa as well as Europe and Asia.

HARVATI 2011

Katerina Harvati, Chris Stringer, Rainer Grün, Maxime Aubert, Philip Allsworth-Jones & Caleb Adebayo Folorunso, *The Later Stone Age Calvaria from Iwo Eleru, Nigeria: Morphology and Chronology. PLoS ONE* **6** (2011), e24024. DOI:10.1371/journal.pone.0024024.

Background: In recent years the Later Stone Age has been redated to a much deeper time depth than previously thought. At the same time, human remains from this time period are scarce in Africa, and even rarer in West Africa. The Iwo Eleru burial is one of the few human skeletal remains associated with Later Stone Age artifacts in that region with a proposed Pleistocene date. We undertook a morphometric reanalysis of this cranium in order to better assess its affinities. We also conducted Uranium-series dating to re-evaluate its chronology.

Methodology/Principal Findings: A 3-D geometric morphometric analysis of cranial landmarks and semilandmarks was conducted using a large comparative fossil and modern human sample. The measurements were collected in the form of three dimensional coordinates and processed using Generalized Procrustes Analysis. Principal components, canonical variates, Mahalanobis D2 and Procrustes distance analyses were performed. The results were further visualized by comparing specimen and mean configurations.

Results point to a morphological similarity with late archaic African specimens dating to the Late Pleistocene. A long bone cortical fragment was made available for U-series analysis in order to re-date the specimen. The results ($\approx 11.7\text{--}16.3$ ka) support a terminal Pleistocene chronology for the Iwo Eleru burial as was also suggested by the original radiocarbon dating results and by stratigraphic evidence.

Conclusions/Significance: Our findings are in accordance with suggestions of deep population substructure in Africa and a complex evolutionary process for the origin of modern humans. They further highlight the dearth of hominin finds from West Africa, and underscore our real lack of knowledge of human evolution in that region.

HENSHILWOOD 2011

Christopher S. Henshilwood et al., *A 100,000-Year-Old Ochre-Processing Workshop at Blombos Cave, South Africa*. [science](#) **334** (2011), 219–222. [s334-0219-Supplement.pdf](#)

Christopher S. Henshilwood, Francesco d’Errico, Karen L. van Niekerk, Yvan Coquinot, Zenobia Jacobs, Stein-Erik Lauritzen, Michel Menu & Renata García-Moreno
The conceptual ability to source, combine, and store substances that enhance technology or social practices represents a benchmark in the evolution of complex human cognition. Excavations in 2008 at Blombos Cave, South Africa, revealed a processing workshop where a liquefied ochre-rich mixture was produced and stored in two *Haliotis midae* (abalone) shells 100,000 years ago. Ochre, bone, charcoal, grindstones, and hammerstones form a composite part of this production toolkit. The application of the mixture is unknown, but possibilities include decoration and skin protection.

UNGAR 2011

Peter S. Ungar & Matt Sponheimer, *The Diets of Early Hominins*. [science](#) **334** (2011), 190–193. [s334-0190-Supplement.pdf](#)

Diet changes are considered key events in human evolution. Most studies of early hominin diets focused on tooth size, shape, and craniomandibular morphology, as well as stone tools and butchered animal bones. However, in recent years, dental microwear and stable isotope analyses have hinted at unexpected diversity and complexity in early hominin diets. Some traditional ideas have held; others, such as an increasing reliance on hard-object feeding and a dichotomy between *Australopithecus* and *Paranthropus*, have been challenged. The first known evidence of C4 plant (tropical grasses and sedges) and hard-object (e.g., seeds and nuts) consumption dates to millions of years after the appearance of the earliest probable hominins, and there are no consistent trends in diet change among these species through time.

Grundlagen

SCHIFFER 1972

Michael B. Schiffer, *Archaeological Context and Systemic Context*. [American Antiquity](#) **37** (1972), 156–165.

The cultural aspect of the processes responsible for forming the archaeological record is argued to be an underdeveloped branch of archaeological theory. A flow model is presented by which to view the “life history” or processes of systemic context of any material element. This model accounts for the production of a substantial portion of the archaeological record. The basic processes of this model are: procurement, manufacture, use, maintenance, and discard. Refuse labels the state of an element in archaeological context. The spatial implications of the model suggest a largely untapped source of behavioral information. Differential refuse disposal patterns are examined as they affect artifact location and association. The meaning of element relative frequencies in refuse is discussed.

Klima

HIROTA 2011

Marina Hirota, Milena Holmgren, Egbert H. Van Nes & Marten Scheffer, *Global Resilience of Tropical Forest and Savanna to Critical Transitions*. [science 334 \(2011\), 232–235](#).

[s334-0232-Supplement.pdf](#)

It has been suggested that tropical forest and savanna could represent alternative stable states, implying critical transitions at tipping points in response to altered climate or other drivers. So far, evidence for this idea has remained elusive, and integrated climate models assume smooth vegetation responses. We analyzed data on the distribution of tree cover in Africa, Australia, and South America to reveal strong evidence for the existence of three distinct attractors: forest, savanna, and a treeless state. Empirical reconstruction of the basins of attraction indicates that the resilience of the states varies in a universal way with precipitation. These results allow the identification of regions where forest or savanna may most easily tip into an alternative state, and they pave the way to a new generation of coupled climate models.

MAYER 2011

Audrey L. Mayer & Azad Henareh Khalyani, *Grass Trumps Trees with Fire*. [science 334 \(2011\), 188–189](#).

Feedbacks involving rainfall, fire, and vegetation govern transitions between forests, savannas, and grasslands.

MUMBY 2011

Peter J. Mumby, Renato Vitolo & David B. Stephenson, *Temporal clustering of tropical cyclones and its ecosystem impacts*. [PNAS 108 \(2011\), 17626–17630](#).

Tropical cyclones have massive economic, social, and ecological impacts, and models of their occurrence influence many planning activities from setting insurance premiums to conservation planning. Most impact models allow for geographically varying cyclone rates but assume that individual storm events occur randomly with constant rate in time. This study analyzes the statistical properties of Atlantic tropical cyclones and shows that local cyclone counts vary in time, with periods of elevated activity followed by relative quiescence. Such temporal clustering is particularly strong in the Caribbean Sea, along the coasts of Belize, Honduras, Costa Rica, Jamaica, the southwest of Haiti, and in the main hurricane development region in the North Atlantic between Africa and the Caribbean. Failing to recognize this natural nonstationarity in cyclone rates can give inaccurate impact predictions. We demonstrate this by exploring cyclone impacts on coral reefs. For a given cyclone rate, we find that clustered events have a less detrimental impact than independent random events. Predictions using a standard random hurricane model were overly pessimistic, predicting reef degradation more than a decade earlier than that expected under clustered disturbance. The presence of clustering allows coral reefs more time to recover to healthier states, but the impacts of clustering will vary from one ecosystem to another.

[climate change | climate variability | multidecadal variability](#)

STAVER 2011

A. Carla Staver Sally Archibald & Simon A. Levin, *The Global Extent and Determinants of Savanna and Forest as Alternative Biome States*. [science 334 \(2011\), 230–232](#).

[s334-0230-Supplement.pdf](#)

Theoretically, fire-tree cover feedbacks can maintain savanna and forest as alternative stable states. However, the global extent of fire-driven discontinuities in tree cover is unknown, especially accounting for seasonality and soils. We use tree cover, climate, fire, and soils data sets to show that tree cover is globally discontinuous. Climate influences tree cover globally but, at intermediate rainfall (1000 to 2500 millimeters) with mild seasonality (less than 7 months), tree cover is bimodal, and only fire differentiates between savanna and forest. These may be alternative states over large areas, including parts of Amazonia and the Congo. Changes in biome distributions, whether at the cost of savanna (due to fragmentation) or forest (due to climate), will be neither smooth nor easily reversible.

Kultur

ORSCHIEDT 1997

Jörg Orschiedt, *Beispiele für Sekundärbestattungen vom Jungpaläolithikum bis zum Neolithikum*. [Ethnographisch-Archäologische Zeitschrift 38 \(1997\), 325–345](#).

Renewed archaeological and osteological investigations were carried out on several inventories of human skeletal remains from the Upper Palaeolithic, the Mesolithic and the Neolithic which have been seen in connection with cannibalistic activities. The analysis and interpretation were based on information from the disciplines of archaeology, physical anthropology, forensic medicine, taphonomy and ethnology. On the Upper Palaeolithic inventories partial manipulations could be seen in form of cut marks. In the case of the skeletal remains of the Brillenhöhle it was possible to prove that several human bodies had been disarticulated and defleshed immediately after death. This complex treatment resulted in a secondary deposition of small skeletal elements and fragments around a fireplace. This observation is supported by other published examples.

There is also evidence of secondary burial practice in the Mesolithic. However, no traces of manipulation can be proved from the available examples. Secondary depositing of human skeletal remains was identified from the Neolithic, in particular from the Linear Pottery Culture and the Upper Neolithic, that is the sites of Jungfern-höhle near Tiefenellern, Wiesbaden-Erbenheim and the Hohlenstein-Stadel; no traces of manipulation could be noticed on these remains. It seems that the skeletal remains were selected and finally deposited after the decomposition of the soft tissues.

Neolithikum

LÜNING 1980

Jens Lüning & Jutta Meurers-Balke, *Experimenteller Getreideanbau im Hambacher Forst, Gemeinde Elsdorf, Kr. Bergheim/Rheinland*. [Bonner Jahrbücher 180 \(1980\), 305–344](#).

SHERRATT 1997

ANDREW SHERRATT (Hrsg.), *Economy And Society in Prehistoric Europe, Changing Perspectives*. ([Edinburgh 2004](#)).