

## Literatur

### Aktuell

EGHOLM 2013

David L. Egholm, Mads F. Knudsen & Mike Sandiford, *Lifespan of mountain ranges scaled by feedbacks between landsliding and erosion by rivers*. [nature](#) **498** (2013), 475–478.

[n498-0475-Supplement1.pdf](#), [n498-0475-Supplement2.mov](#)

An important challenge in geomorphology is the reconciliation of the high fluvial incision rates observed in tectonically active mountain ranges with the long-term preservation of significant mountain range relief in ancient, tectonically inactive orogenic belts<sup>1–3</sup>. River bedrock erosion and sediment transport are widely recognized to be the principal controls on the lifespan of mountain ranges. But the factors controlling the rate of erosion<sup>4–8</sup> and the reasons why they seem to vary significantly as a function of tectonic activity remain controversial. Here we use computational simulations to show that the key to understanding variations in the rate of erosion between tectonically active and inactive mountain ranges may relate to a bidirectional coupling between bedrock river incision and landslides. Whereas fluvial incision steepens surrounding hillslopes and increases landslide frequency<sup>9</sup>, landsliding affects fluvial erosion rates in two fundamentally distinct ways. On the one hand, large landslides overwhelm the river transport capacity and cause upstream build up of sediment that protects the river bed from further erosion<sup>9–11</sup>. On the other hand, in delivering abrasive agents to the streams<sup>4–6</sup>, landslides help accelerate fluvial erosion. Our models illustrate how this coupling has fundamentally different implications for rates of fluvial incision in active and inactive mountain ranges. The coupling therefore provides a plausible physical explanation for the preservation of significant mountain range relief in old orogenic belts, up to several hundred million years after tectonic activity has effectively ceased.

### Anthropologie

BISHOP 2013

Dorothy V. M. Bishop, *Cerebral Asymmetry and Language Development: Cause, Correlate, or Consequence?* [science](#) **340** (2013), 1302. [DOI:10.1126/science.1230531](#).

**Background:** Most children learn language effortlessly, but a minority struggle to master their native tongue for no obvious reason. This is known as specific language impairment. Affected children often have trouble learning to read and may also be diagnosed with developmental dyslexia. These language and literacy impairments are highly heritable, but their neurobiological basis is poorly understood. A popular notion is that the usual pattern of left-sided brain lateralization for language is disrupted in some children, which leads to problems with language and literacy. Until recently, it was difficult to test this idea, because we lacked easy methods to assess cerebral asymmetry directly in children.

**Advances:** In this Review, I argue that the evidence for the endophenotype account is unconvincing, not least because there is little support for strong genetic influences on individual differences in cerebral asymmetry. Research on this topic is

in its infancy, and most of the relevant studies are underpowered, so it would be premature to conclude that genes play no role. Nevertheless, we need to question common scientific views that ignore evidence for a substantial effect of nongenetic influences on individual differences in brain lateralization. Furthermore, cerebral lateralization is not fixed from birth; it can change with age. Thus, it seems likely that atypical cerebral asymmetry in language and literacy impairments is at least partly a consequence of poor language development.

#### KLEIN 2013

Richard G. Klein & Teresa E. Steele, *Archaeological shellfish size and later human evolution in Africa*. *PNAS* **110** (2013), 10910–10915.

Approximately 50 ka, one or more subgroups of modern humans expanded from Africa to populate the rest of the world. Significant behavioral change accompanied this expansion, and archaeologists commonly seek its roots in the African Middle Stone Age (MSA;  $\approx 200$  to  $\approx 50$  ka). Easily recognizable art objects and “jewelry” become common only in sites that postdate the MSA in Africa and Eurasia, but some MSA sites contain possible precursors, especially including abstractly incised fragments of ocher and perforated shells interpreted as beads. These proposed art objects have convinced most specialists that MSA people were behaviorally (cognitively) modern, and many argue that population growth explains the appearance of art in the MSA and its post-MSA florescence. The average size of rocky intertidal gastropod species in MSA and later coastal middens allows a test of this idea, because smaller size implies more intense collection, and more intense collection is most readily attributed to growth in the number of human collectors. Here we demonstrate that economically important Cape turban shells and limpets from MSA layers along the south and west coasts of South Africa are consistently and significantly larger than turban shells and limpets in succeeding Later Stone Age (LSA) layers that formed under equivalent environmental conditions. We conclude that whatever cognitive capacity precocious MSA artifacts imply, it was not associated with human population growth. MSA populations remained consistently small by LSA standards, and a substantial increase in population size is obvious only near the MSA/LSA transition, when it is dramatically reflected in the Out-of-Africa expansion.

modern human origins | prehistoric coastal foraging | stone age population size | Still Bay | Howieson’s Poort

#### LARSON 2007

Susan G. Larson, *Evolutionary Transformation of the Hominin Shoulder*. *Evolutionary Anthropology* **16** (2007), 172–187.

Despite the fact that the shoulder is one of the most extensively studied regions in comparative primate and human anatomy, two recent fossil hominin discoveries have revealed quite unexpected morphology. The first is a humerus of the diminutive fossil hominin from the island of Flores, *Homo floresiensis* (LB1/50), which displays a very low degree of humeral torsion<sup>1,2</sup> (Fig. 1; see Box 1). Modern humans have a high degree of torsion and, since this is commonly viewed as a derived feature shared with hominoids,<sup>3–6</sup> one would expect all fossil hominins to display high humeral torsion. The second is the recently discovered *Australopithecus afarensis* juvenile scapula DIK-1-1 from Dikika, Ethiopia, which seems to most closely resemble those of gorillas.<sup>7</sup> This specimen is the first nearly complete scapula known for an early hominin and, given the close phylogenetic relationship between humans and chimpanzees suggested by molecular studies,<sup>8–13</sup> one would have expected more similarity to chimpanzees among extant hominoids.

## ROACH 2013

Neil T. Roach, Madhusudhan Venkadesan, Michael J. Rainbow & Daniel E. Lieberman, *Elastic energy storage in the shoulder and the evolution of high-speed throwing in Homo*. [nature 498 \(2013\), 483–486](#).  
n498-0483-Supplement1.pdf

Some primates, including chimpanzees, throw objects occasionally<sup>1,2</sup>, but only humans regularly throw projectiles with high speed and accuracy. Darwin noted that the unique throwing abilities of humans, which were made possible when bipedalism emancipated the arms, enabled foragers to hunt effectively using projectiles<sup>3</sup>. However, there has been little consideration of the evolution of throwing in the years since Darwin made his observations, in part because of a lack of evidence of when, how and why hominins evolved the ability to generate high-speed throws<sup>4–8</sup>. Here we use experimental studies of humans throwing projectiles to show that our throwing capabilities largely result from several derived anatomical features that enable elastic energy storage and release at the shoulder. These features first appear together approximately 2 million years ago in the species *Homo erectus*. Taking into consideration archaeological evidence suggesting that hunting activity intensified around this time<sup>9</sup>, we conclude that selection for throwing as a means to hunt probably had an important role in the evolution of the genus *Homo*.

## Datierung

## TRIBOLO 2013

C. Tribolo et al., *OSL and TL dating of the Middle Stone Age sequence at Diepkloof Rock Shelter (South Africa), A clarification*. [Journal of Archaeological Science 40 \(2013\), 3401–3411](#).

JArchSci40-3401-Supplement1.pdf

C. Tribolo, N. Mercier, E. Douville, J.-L. Joron, J.-L. Reyss, D. Rufer, N. Cantin, Y. Lefrais, C. E. Miller, G. Porraz, J. Parkington, J.-P. Rigaud & P.-J. Texier  
Diepkloof Rock Shelter offers an exceptional opportunity to study the onset and evolution of both Still Bay (SB) and Howiesons Poort (HP) techno-complexes. However, previous age estimates based on luminescence dating of burnt quartzites (Tribolo et al., 2009) and of sediments (Jacobs et al., 2008) were not in agreement. Here, we present new luminescence ages for 17 rock samples (equivalent dose estimated with a SAR-ITL protocol instead of classical MAAD-TL) as well as for 5 sediment samples (equivalent dose estimated with SAR-single grain OSL protocol) and an update of the 22 previous age estimates for burnt lithics (modified calibration and beta dose estimates). While a good agreement between the rock and sediment ages is obtained, these estimates are still significantly older than those reported by Jacobs et al. (2008). After our own analyses of the sediment from Diepkloof, it is suspected that these authors did not correctly choose the parameters for the equivalent dose determination, leading to an underestimate of the equivalent doses, and thus of the ages.

From bottom to top, the mean ages are  $100 \pm 10$  ka for stratigraphic unit (SU) Noël and  $107 \pm 11$  ka for SU Mark (uncharacterized Lower MSA),  $100 \pm 10$  ka for SU Lynn-Leo (Pre-SB type Lynn),  $109 \pm 10$  ka for SUs Kim-Larry (SB),  $105 \pm 10$  ka for SUs Kerry-Kate and  $109 \pm 10$  ka for SU Jess (Early HP),  $89 \pm 8$  ka for SU Jude (MSA type Jack),  $77 \pm 8$  ka for SU John,  $85 \pm 9$  ka for SU Fox,  $83 \pm 8$  ka for SU Fred and  $65 \pm 8$  ka for SU OB5 (Intermediate HP),  $52 \pm 5$  ka for SUs OB2-4 (Late HP).

This chronology, together with the technological analyses, greatly modifies the current chrono-cultural model regarding the SB and the HP and has important

archaeological implications. Indeed, SB and HP no longer appear as short-lived techno-complexes with synchronous appearances for each and restricted to Oxygen Isotopic Stage (OIS) 4 across South Africa, as suggested by Jacobs et al. (2008, 2012). Rather, the sequence of Diepkloof supports a long chronology model with an early appearance of both SB and HP in the first half of OIS 5 and a long duration of the HP into OIS 3. These new dates imply that different technological traditions coexisted during OIS 5 and 4 in southern Africa and that SB and HP can no longer be considered as horizon markers.

Keywords: Middle Stone Age | Howiesons Poort | Still Bay | TL | OSL

## Grabung

### CARTWRIGHT 2013

Caroline R. Cartwright, *Identifying the woody resources of Diepkloof Rock Shelter (South Africa) using scanning electron microscopy of the MSA wood charcoal assemblages*. [Journal of Archaeological Science 40 \(2013\), 3463–3474](#).

This article presents the results of the anatomical identification of wood charcoal from pre-Still Bay, Still Bay and Howiesons Poort assemblages at Diepkloof Rock Shelter (South Africa) using scanning electron microscopy. In the earliest phases, with pre-Still Bay stone tools, the charcoal shows a predominance of Afromontane forest taxa, some riverine woodland species, mesic thicket and proteoid fynbos vegetation. With a change in lithic technology in Still Bay contexts, the balance of Afromontane and thicket taxa shifts towards favouring the latter. A more diverse array of proteoid fynbos species emerges, and there is evidence for the use of plants from the local wetlands of the Verlorenvlei. In Howiesons Poort contexts, typified by a different lithic technology, the charcoal shows some Afromontane forest persisting, but the overwhelming change is towards greater species diversity, with the woody taxa being increasingly representative of thicket and shrubland. Some of the fynbos and thicket species are typical of vegetational communities which inhabit well-drained soils, rocky or dry locations at the present day. More wetland plants from the Verlorenvlei were selected for use.

The range of taxa in pre-Still Bay, Still Bay and Howiesons Poort contexts and the diversity of their preferred habitats (modelled on present-day recorded distributions) cannot be interpreted in a simplistic manner to reflect a unilinear change in climatic or soil moisture conditions. Whilst such factors may have played a significant part and contributed to some or all of the taxa having very different phytogeographical distributions compared to their modern counterparts (as at the nearby Elands Bay Cave), it is also necessary to consider to what extent people might have collected these diverse woody resources from a mosaic of vegetational communities, some local, some far away. These scenarios are not mutually exclusive and future collaborative work, which aims to include detailed local mapping of all woody taxa present in the sequence, will be crucial for presenting a resolved palaeoenvironmental and phytogeographical reconstruction through time.

Keywords: Wood charcoal | Scanning electron microscopy | Middle Stone Age | Vegetation change | Palaeoenvironments | Wood selection

### CHARRIÉ-DUHAUT 2013

Armelle Charrié-Duhaut et al., *First molecular identification of a hafting adhesive in the Late Howiesons Poort at Diepkloof Rock Shelter (Western Cape, South Africa)*. [Journal of Archaeological Science 40 \(2013\), 3506–3518](#).

Armelle Charrié-Duhaut, Guillaume Porraz, Caroline R. Cartwright, Marina Igreja, Jacques Connan, Cedric Poggenpoel & Pierre-Jean Texier

The hafting of tools using adhesive is one of the innovative features that characterizes the southern African Middle Stone Age. This technology has mainstream implications but remains insufficiently documented, largely due to unequal organic preservation and non-adapted analytical procedures. A notable exception is provided by the recent results from the site of Sibudu (Lombard, 2006; Wadley et al., 2009).

The excavation at Diepkloof Rock Shelter has revealed several lithic artifacts with a black residue distributed over their surface. Their stratigraphic distribution reveals a strict association with the Howiesons Poort (HP) and suggests a close relationship between the appearance of hafting adhesive and the appearance of blades and geometric backed tools. Macroscopic and microscopic observations attest to a hafting that was exclusively lateralized and preliminary use-wear analysis (Igreja and Porraz, 2013) supports the hypothesis that hafted tools were mostly integrated within daily (domestic) activities.

In this study, we focused specifically on a chemical study of a thick black residue found on a quartz flake attributable to the Late phase of the HP. We determine, for the first time in a MSA context, the nature of the compound adhesive and reconstruct a picture of the multilevel operations and interactions that comprise the process of hafting. The molecular analysis attests to the exploitation of *Podocarpus elongatus* (Yellowwood), collected in the form of a resin that was naturally dried or heated at a low temperature and possibly mixed with fragmented bone and quartz grains. Compared to Sibudu where ochre additive is documented, the hafting technology at Diepkloof introduces another level of variability within the HP tradition and suggests the existence of regional expressions and adaptations.

**Keywords:** Southern Africa | Middle Stone Age | Howiesons Poort | Lithic technology | Hafting | Vegetal adhesive | *Podocarpus elongatus* | Diterpenoids | GCeMS

## DAYET 2013

L. Dayet, P.-J. Texier, F. Daniel & G. Porraz, *Ochre resources from the Middle Stone Age sequence of Diepkloof Rock Shelter, Western Cape, South Africa*. [Journal of Archaeological Science](#) **40** (2013), 3492–3505.

[JArchSci40-3492-Supplement1.pdf](#), [JArchSci40-3492-Supplement2.pdf](#), [JArchSci40-3492-Supplement3.pdf](#), [JArchSci40-3492-Supplement4.pdf](#)

Although no paintings are associated with archaeological contexts before the end of the Middle Stone Age, hundreds of ochre pieces were discovered on numerous southern African sites suggesting a lasting tradition of ochre use. The variability and the significance of ochre exploitation remain however poorly documented. The MSA site of Diepkloof Rock Shelter (Western Cape Province, South Africa) offers an ideal opportunity to discuss questions of ochre procurement, processing, and use over a long sequence. This study develops an original methodology based on observations on one hand, and SEM-EDS, XRD and Raman spectrometry analyses on the other hand. By comparing raw materials with our geological database, we show that some iron-rich raw materials were collected more than 20 km from the site. Such long-distance procurement combined with other elements of the overall context suggests a planning of procurement. One main chaîne opératoire based on grinding was identified at Diepkloof. In comparison with other South African sites, we observed no evidence for use as loading agent in adhesives. We conclude that ochre use may follow regional cultural patterns.

**Keywords:** Ochre | Middle Stone Age | South Africa | Provenance | Processing | Pigments

## IGREJA 2013

Marina Igreja & Guillaume Porraz, *Functional insights into the innovative Early Howiesons Poort technology at Diepkloof Rock Shelter (Western Cape, South Africa)*. [Journal of Archaeological Science](#) **40** (2013), 3475–3491.

The Howiesons Poort ('HP') is characterized by a set of technological innovations that mark a rupture in the Southern African Middle Stone Age. However perspectives regarding its origin and emergence remain speculative. The recent identification of an Early HP phase at Diepkloof Rock Shelter provides the opportunity to characterize the initial stage of this technology and to discuss various mechanisms behind its innovative characteristics.

This study provides a technological characterization of the Early HP lithic industry of Diepkloof that focuses on micro-wear analysis. These results suggest that the Early HP contained the full spectrum of innovations found in later expressions of the HP in terms of raw material provisioning strategies and techno-typological rules. Use-wear analyses support the suggestion that a wide range of activities were performed on site and show that geometric backed tools (predominantly composed of truncated forms) were 1) not devoted to specific tasks and 2) used predominantly as knives, not as projectiles. The innovative driver at the origin of the HP is likely not related to the adoption of new hunting weapons but to a novel way of conceiving and hafting tools, based on standardized and interchangeable products. The rapid adoption of this new hafting technique may explain the sudden appearance of the HP technological system in the archaeological record.

Keywords: Middle Stone Age | Early Howiesons Poort | Backed tools | Blades | Hafting | Use-wear analysis

## MILLER 2013

Christopher E. Miller, Paul Goldberg & Francesco Berna, *Geoarchaeological investigations at Diepkloof Rock Shelter, Western Cape, South Africa*. [Journal of Archaeological Science](#) **40** (2013), 3432–3452.

The sedimentary sequence at Diepkloof Rock Shelter formed through a complex interaction of depositional and post-depositional processes and was variously influenced by biogenic, geogenic, and anthropogenic agents. Here, we present the results of a micromorphological study of the sediments at Diepkloof, focusing in particular on the numerous anthropogenic inputs and modifications recorded within the sequence. By applying the microfacies concept, we were able to identify hearth burning and maintenance, bedding construction and burning, and surface modification by trampling as major processes that contributed to the formation of the site. The human activities recorded within the sediments show a marked change throughout the sequence, implying a shift in the use of the site over time. The present study also provides a context for evaluating other classes of artifacts and data collected from the site.

Keywords: Middle Stone Age | Micromorphology | FTIR | Site formation processes | Combustion features

## PARKINGTON 2013

J. E. Parkington, J.-Ph. Rigaud, C. Poggenpoel, G. Porraz & P.-J. Texier, *Introduction to the project and excavation of Diepkloof Rock Shelter (Western Cape, South Africa), A view on the Middle Stone Age*. [Journal of Archaeological Science](#) **40** (2013), 3369–3375.

This introduction presents the background to the present research project at Diepkloof Rock Shelter, initiated in 1998. It is followed by a series of original papers

that were presented in November 2010 at the joint 13th PAA Congress (Panafri-  
can Association of Prehistory and Associated Disciplines) and 20th conference of  
SAFA (Society of Africanist Archaeologists) at the University Cheikh Anta Diop  
in Dakar (Senegal). These papers were presented in a “Symposium on the MSA  
sequence of Diepkloof Rock Shelter: a view on the cultural evolution of southern  
African modern humans” organized by Pierre-Jean Texier, Guillaume Porraz, John  
Parkington and Jean-Philippe Rigaud. This series of papers is a first attempt at  
a multidisciplinary reconstruction of the way Middle Stone Age people inhabited  
the site of Diepkloof and the way they interacted with their environment. The  
resultant narrative outlines artifactual change through the sequence and discusses  
the factors that might underlie it.

Keywords: Middle Stone Age | South Africa | Diepkloof Rock Shelter | Late Pleisto-  
cene

### PORRAZ 2013

Guillaume Porraz et al., *The MSA sequence of Diepkloof and the  
history of southern African Late Pleistocene populations*. [Journal of  
Archaeological Science](#) **40** (2013), 3542–3552.

Guillaume Porraz, John E. Parkington, Jean-Philippe Rigaud, Christopher E.  
Miller, Cedric Poggenpoel, Chantal Tribolo, Will Archer, Caroline R. Cartwright,  
Armelle Charrié-Duhaut, Laure Dayet, Marina Igreja, Norbert Mercier, Patrick  
Schmidt, Christine Verna & Pierre-Jean Texier

This paper presents the first multidisciplinary synthesis of the Middle Stone Age  
sequence of Diepkloof Rock Shelter (South Africa). We explore the main cultural  
changes that characterized southern African hunter-gatherer societies from OIS 5  
to the beginning of OIS 3. We discuss the tempo of these changes, test the current  
interpretative hypotheses and explore an empirical model to explain the early  
appearance of symbolic marking within the Pleistocene huntergatherer societies of  
southern Africa.

Major technological and cultural innovations appear in one form or another during  
OIS 5 in southern Africa, a period characterized by the coexistence of multiple,  
distinct technological traditions. We argue that the formation of regional identities  
in southern Africa would have favoured and increased cultural interactions between  
groups at a local scale, providing a favourable context for the development and  
diffusion of innovations. In the West Coast of South Africa, the main cultural  
innovations appear within the Howiesons Poort. It is within this context that we  
postulate a change in regional networks and population dynamics, leading to the  
success of the HP technology across southern Africa. The southern African data  
suggest that the history of modern humans has been characterized by multiple  
and independent evolutionary trajectories and that different paths and scenarios  
existed towards the adoption of ‘modern’ hunter-gatherer lifestyles.

Keywords: Anatomically Modern Humans | Southern Africa | Late Pleistocene |  
Innovations | Regionalization | Still Bay | Howiesons Poort | Modern hunter-gathe-  
rers

### PORRAZ 2013

Guillaume Porraz, Pierre-Jean Texier, Will Archer, Michel Piboule,  
Jean-Philippe Rigaud & Chantal Tribolo, *Technological successions  
in the Middle Stone Age sequence of Diepkloof Rock Shelter, Western  
Cape, South Africa*. [Journal of Archaeological Science](#) **40** (2013), 3376–  
3400.

JArchSci40-3376-Supplement1.pdf

The southern African MSA comprises a series of phases of unique technological innovations that fuel current models on the evolutionary processes of Anatomically Modern Humans. However, the nature and variability of these technological phases remain poorly documented. This study reports on the previously unpublished sequence of Diepkloof Rock Shelter (South Africa) and investigates the main technological changes therein, particularly emphasizing the emergence, succession and disappearance of the Still Bay (SB) and the Howiesons Poort (HP). We argue for technological change that occurred at different rates and under the influence of variable driving factors. Our model implies that the SB and the HP are not related to the influx of new populations but have regionally specific origins. Unlike the other technocomplexes, the HP at Diepkloof is subdivided into different phases (Early, Intermediate and Late) but only the upper phases resemble the so-called “classic” HP. Finally, the technological sequence of Diepkloof questions the homogeneous picture which has been so far assumed for the southern African MSA and places emphasis on the importance of exploring long regional sequences.

**Keywords:** Middle Stone Age | Anatomically modern humans | Upper Pleistocene | Lithic technology | Still Bay | Howiesons Poort

### SCHMIDT 2013

Patrick Schmidt, Guillaume Porraz, Aneta Slodczyk, Ludovic Bellotguret, William Archer & Christopher E. Miller, *Heat treatment in the South African Middle Stone Age, Temperature induced transformations of silcrete and their technological implications*. [Journal of Archaeological Science](#) **40** (2013), 3519–3531.

It was recently found that silcrete raw material was heat-treated during the South African Middle Stone Age (MSA) for altering its flaking properties. This finding led to hypotheses about the implications for the MSA hunter-gatherers such as the cost of thermal treatment in terms of investment and firewood. To date, these hypotheses lack a solid basis, for data on the thermal transformations of South African silcrete and, hence, the necessary heating procedure and heating environment, is missing. In order to produce such data, we conducted an experimental study within the framework of the Diepkloof project. This work is based on the petrographic, mineralogical and structural analysis of South African silcrete from the West Coast and its thermal transformations. Our results shed light on the nature of these transformations, the ideal heating temperatures and the tolerated heating speed. The processes occurring in silcrete are comparable to flint, i.e. the loss of chemically bound ‘water’ and the formation of new Si-O-Si bonds, but their intensity is less pronounced. Effective heating temperatures are significantly higher than for flint and the heating speed tolerated by South African silcrete is relatively fast. These findings imply that silcrete heat treatment cannot be directly compared with flint heat treatment. Unlike flint, heating silcrete does not require the setup of a dedicated heating environment and may have been performed in the same time as other fire related activities. This would represent only a minor supplementary investment in time and firewood. These results have broad implications for the discussion about technological evolution and the acquisition of specialised knowledge in the MSA.

**Keywords:** Heat treatment | Silcrete | MSA | South Africa | Thermal properties | Raw material

### STEELE 2013

Teresa E. Steele & Richard G. Klein, *The Middle and Later Stone Age faunal remains from Diepkloof Rock Shelter, Western Cape, South Africa*. [Journal of Archaeological Science](#) **40** (2013), 3453–3462.

The faunal sample from the Middle Stone Age (MSA) and overlying Later Stone Age (LSA) deposits of Diepkloof Rock Shelter (Western Cape Province, South Africa) includes at least 40 taxa, mostly mammals, but also tortoises, snakes, birds (especially ostrich represented by eggshell), and intertidal mollusks. The LSA sample contains only species that occurred nearby historically, including domestic sheep, which LSA people introduced to the region by 1800 years ago. In contrast, like other Western Cape MSA faunas, the Diepkloof MSA sample has more species and it is especially notable for five large extralimital grazing species. These imply a greater-than-historic role for grasses in the local vegetation, particularly in the post-Howiesons Poort (latest MSA) interval where the grazers appear most abundant. Extreme fragmentation and dark-staining impedes analysis of the MSA bones, but cut-marks, abundant burning, and numerous associated artifacts suggest that people were the main accumulators. Rare coprolites imply that carnivores could have contributed some bones, and concentrations of small mammal bones, particularly near the bottom of the MSA sequence, suggest a role for raptors. Tortoise bones are common throughout the sequence, and the MSA specimens tend to be especially large, as in other MSA assemblages. The LSA specimens are smaller, probably because LSA human populations were denser and preyed on tortoises more intensively. The most surprising aspect of the Diepkloof assemblage is its marine component. The coast is currently 14 km away and it would have been even more distant during much of the MSA when sea levels were often lower. Intertidal mollusks, particularly black mussels and granite limpets, are concentrated in the LSA and in the Late and Post-Howiesons Poort layers. Only LSA shells are complete enough for measurement, and the limpets are small as at other LSA sites. The implication is again for more intense LSA collection by relatively dense human populations. Both the LSA and MSA deposits also contain bones of shorebirds and Cape fur seals. Whale barnacles and occasional dolphin bones indicate that MSA people scavenged beached cetaceans.

**Keywords:** Faunal analysis | Middle Stone Age | Later Stone Age | Stone Age ecology | Western Cape, South Africa | Modern human origins

## TEXIER 2013

Pierre-Jean Texier, Guillaume Porraz, John Parkington, Jean-Philippe Rigaud, Cedric Poggenpoel & Chantal Tribolo, *The context, form and significance of the MSA engraved ostrich eggshell collection from Diepkloof Rock Shelter, Western Cape, South Africa*. [Journal of Archaeological Science](#) **40** (2013), 3412–3431.

Broken ostrich eggshells are commonly found in Middle Stone Age sites of southern Africa, presumably collected for food consumption, and later used as artefacts. At Diepkloof Rock Shelter, Middle Stone Age inhabitants used ostrich eggshells as a medium to convey abstract depictions. Since 1998, excavations at Diepkloof have recovered 408 engraved pieces of ostrich eggshells. The study of these shows that Diepkloof inhabitants applied a restricted set of geometric engraving patterns, with the dominance of 2 main motifs, one using a hatched band and the other sub-parallel to converging lines. These motifs coexisted, but shifted in frequency toward the latter through time. Together with evidence that ostrich eggshells were used as containers, these patterns support the hypothesis that engravings were made with respect to clear but flexible social conventions and were part of a complex system of visual and symbolic communication. Since our last report (Texier et al., 2010), a few engraved pieces have been found in lower stratigraphic units, expanding substantially the time-range of the engraving practice on ostrich eggshells at Diepkloof. The earliest engravings appear at the end of the Early Howiesons Poort phase, but become numerous only during the Intermediate

and Late phases of the Howiesons Poort. The collection from Diepkloof is presently unique and likely underlines the existence of regional traditions within the Howiesons Poort. Interestingly, and significantly in our view, the engraving disappears at the same time as the Howiesons Poort technology. We argue that this disappearance may reflect a modification in the way late Middle Stone Age inhabitants interacted with one another.

**Keywords:** Middle Stone Age | Symbolism | Ostrich eggshells | Howiesons Poort | Geometric motifs

#### VERNA 2013

Christine Verna, Pierre-Jean Texier, Jean-Philippe Rigaud, Cedric Poggenpoel & John Parkington, *The Middle Stone Age human remains from Diepkloof Rock Shelter (Western Cape, South Africa)*. [Journal of Archaeological Science 40 \(2013\), 3532–3541](#).

In the course of recent excavations at Diepkloof Rock Shelter (South Africa), three human remains were found in the Middle Stone Age layers. These human remains are two pedal phalanges (intermediate and distal) from a fifth ray, which belong to the same individual, and a deciduous first lower molar. The layers in which they were found represent the end of the Howiesons Poort and the beginning of post-Howiesons Poort occupation, and are radiometrically dated to MIS 3, between 45 and 65 kyr ago. They are thus very close in time to the assumed period of anatomically modern humans (AMH) dispersal out of Africa into Eurasia, a period for which very few remains are available in the African fossil record. Here, we describe these new remains and compare their morphology and dimensions to samples of African and Eurasian Pleistocene and Holocene humans. Our results show that the human remains from Diepkloof Rock Shelter fall well within the range of variation of AMH. The phalanges are of very small size and indistinguishable from those of recent humans. In addition, our analysis of the dm1 underlines a large size variation at the end of the MIS 4/beginning of the MIS 3 in the Western Cape. The discovery of human remains at Diepkloof Rock Shelter, albeit limited to three small bones, enriches a poorly represented chronological period of the African hominin fossil record.

**Keywords:** Out of Africa | Hominins | Modern humans | Pleistocene | Howiesons Poort | Phalanges | Teeth

## Methoden

#### DOLLHOPF 2002

Klaus-Dieter Dollhopf, *Erwachsenenrepräsentanz oder Erosionsverlust? Gedanken zu einem Dogma der Paläodemographie des frühen Mittelalters*. [Germania 80 \(2002\), 295–304](#).

The formula to calculate population size developed by the Hungarian scientists Gy. Acsádi and J. Nemeskeri in 1957 is still frequently used today in both archaeology as well as in palaeodemography. It depends in great part on the assumption that the number of excavated or interpolated adult burials represents the original number of interments. While a vast loss of child burials through erosion since the early Middle Ages was assumed, this was ruled out for adult burials. This assumption should in no way be seen as an unshakeable axiom, and with the help of examples, the consequences for calculated population sizes are demonstrated.

Die 1957 von den beiden ungarischen Forschern Gy. Acsádi und J. Nemeskeri entwickelte Formel zur Berechnung von Populationsgrößen wird heute sowohl in der Archäologie als auch in der Paläodemographie vielfach verwendet. Sie beruht zu

einem wesentlichen Teil auf der Annahme, die Anzahl der freigelegten bzw. interpolierten Erwachsenengräber repräsentiere die ursprüngliche Zahl der Bestatteten. Während man für Kindergräber einen z.T. enormen Verlust durch die seit dem Frühmittelalter eingetretene Erosion angenommen hat, wird dies für die Gräber Erwachsener ausgeschlossen. Es wird gezeigt, daß diese Annahme keineswegs als unerschütterbares Axiom gelten kann, und anhand einiger Beispiele werden die Konsequenzen für errechnete Populationsgrößen dargestellt.

#### NEUSTUPNÝ 1983

Evžen Neustupný, *The demography of prehistoric cemeteries*. *Památky-Archeologické* 74 (1983), 7–34.

The first part of this paper discusses demographic theory. The most serious obstacle to reconstructions based on skeletal series appears to be their incompleteness (burials outside regular cemeteries) while the question of non-stationarity may be of secondary importance. The conditions for applying Halley's method to the construction of life tables are therefore of prime interest. Attention is paid to the theory of "apparent" life tables deformed by non-zero growth rate. The demographic theory and supposed (or inferred) initial conditions enable the formulation of models that can be tested against archaeological and anthropological data (type of populations, their sex and age structure, population size, number of graves to be expected, mobility in time and space, etc.). The main reason for population growth in prehistory was the formation of a non-equilibrium state in social relations. In consequence of this, population growth cannot be viewed as an autonomous factor causing economic and social change or historical events. The second part of the paper applies this theory to several examples from Central Europe (Linear Pottery in East Germany, Corded Ware at Vlketice, La-Tène cemeteries in Bohemia, and Early Medieval series from Moravia). Full text of the paper has been published by the Archaeological Institute in Prague in the Czech language (*Demografie pravěkých pohřebišť*, Praha 1983).

## Mittelpaläolithikum

#### RICHTER 2002

Jürgen Richter, *Die <sup>14</sup>C-Daten aus der Sesselfelsgrötte und die Zeitstellung des Micoquien/M.M.O.* *Germania* 80 (2002), 1–22.

The Sesselfelsgrötte, a cave in the lower Altmühl valley in Bavaria, is the site of Central Europe's most extensive sequence of late Middle Palaeolithic strata. Investigations in the Sesselfelsgrötte have led to a complete re-assessment of the cultures of the late Neanderthals. While the earlier view was that the Micoquian belonged to the period between the end of the last warm period and the early phase of the last glaciation (OIS 5 according to the oxygen isotope chronology, ca. 125,000 to 70,000 B.P.), evidence is accumulating for a shorter duration and for a more recent dating of the Micoquian (at least 15,000 years later, to OIS 3). New <sup>14</sup>C-data from the stratigraphy of the Sesselfelsgrötte in the Altmühl valley provide support for the thesis of a later and shorter chronology of the Micoquian, newly defined as "M.M.O", occurring at the very end of the Middle Palaeolithic period.

Die Sesselfelsgrötte im Unteren Altmühltal in Bayern enthält die umfangreichste Schichtenabfolge des späten Mittelpaläolithikums in Mitteleuropa. Die Untersuchungen in der Sesselfelsgrötte führten zu einer völligen Neubewertung der Kulturen des späten Neandertalers. Während früher die Auffassung bestand, das Micoquien gehöre in die Zeit zwischen dem Ende der letzten Warmzeit und der

Frühphase der letzten Kaltzeit (OIS 5 nach der Sauerstoff-Isotopen-Chronologie, rund 125000 bis 70000 Jahre vor Heute), verdichten sich die Argumente für eine kürzere Dauer und für eine mindestens 15000 Jahre jüngere Zeitstellung des Micoquien (OIS 3). Neue <sup>14</sup>C-Daten aus der Stratigraphie der Sesselfelsgrotte im Altmühltal stützen die These einer späten und kurzen Chronologie des Micoquien, das als “M. M. O.” neu definiert wird und ganz an das Ende des Mittelpaläolithikums gehört.

## Story or Book

NISBET 2013

Euan Nisbet, *Probability-1: Termination, Minuscule moves in the struggle for funds.* [nature 498](#) (2013), 532.