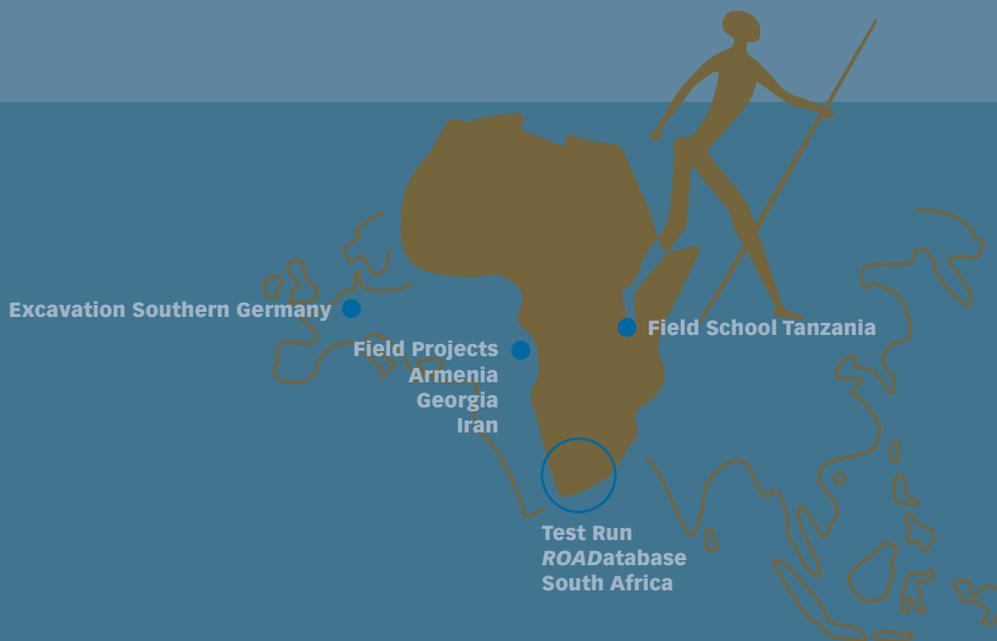




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# The Role of Culture in Early Expansions of Humans



**HEIDELBERGER AKADEMIE  
DER WISSENSCHAFTEN**

Akademie der Wissenschaften des Landes Baden-Württemberg



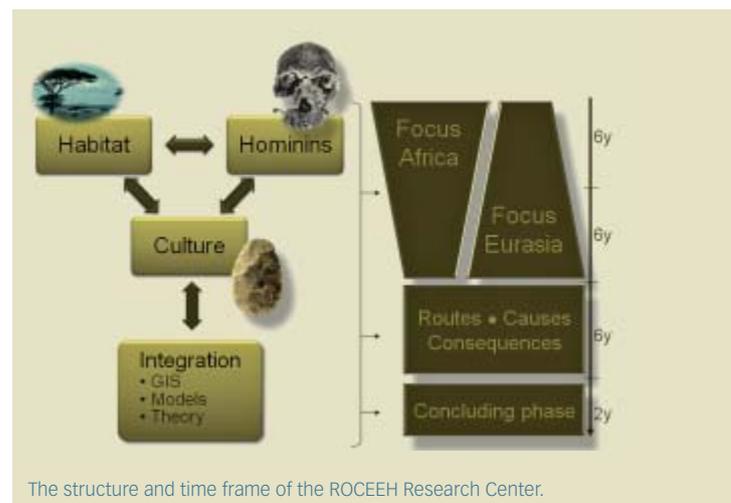
## THE ROLE OF CULTURE IN EARLY EXPANSIONS OF HUMANS

### Editorial

This is the first newsletter of “The Role of Culture in Early Expansions of Humans” (ROCEEH) Research Center of the Heidelberg Academy of Sciences and Humanities. The purpose of this newsletter is to inform those interested in ROCEEH’s work about current developments, events and publications. The deadline for news included in this issue was 30 June 2009.

#### ROAD (ROCEEH Out of Africa Database)

The backbone of the ROCEEH research center is a georelational and web-based database that provides the foundation for the scientific investigation into the earlier expansions of humankind. The database integrates vegetational history, paleontology, climatic record and geophysical information in standardized and homogenized formats. Based on this data, prehistoric habitats and early human expansion dynamics will be modeled encompassing archaeological and paleoanthropological perspectives. In addition to a detailed review of the existing literature, the project members conduct new field work to collect additional sets of data. Pollen analysis, the investigation of faunal and hominin remains, and the examination of Stone Age artifacts recovered from excavations and contained in museum collections will systematically expand the pool of data. The interdisciplinary data is stored, managed and analyzed with the help of a Geographical Information System (GIS) to understand the spatial and temporal changes and their interdependency. Geographical modeling helps to understand expansion pathways and to reconstruct paleotopography and geography. Technical details have been presented by Michael Märker et al. at the Computer Applications to Archaeology Conference (CAA) at Williamsburg.



The **ROAD** system prototype stands for the **ROCEEH Out of Africa Database**. ROAD is intended to guarantee easy access via different types of internet browsers. Due to its structure as a geo-relational database, ROAD offers a proper and uncomplicated way to manage and administer both users and data. It allows the exchange of information and simple analyses, including data queries and visualization

Geelbek dunes, South Africa.



of data via the map server interface. ROAD was developed primarily utilizing open source software and following common data standards. We hope that in the future this database will become a central tool for scientists who work on the issue of early human expansions.

### Test run: South Africa

After finalizing the structure of ROAD, we will conduct a test run before opening the database to our network partners. During the test run, the database and map interface will be assessed for their functionality. The aim of the test run is to optimize data integration and to select, develop and standardize methods of analysis. As a spatially and chronologically limited test, we chose South Africa with a special focus on the Western Cape region and a time span of ca. 160–40 ka (MIS 6–3). 38 archaeological sites with Middle Stone Age remains have been included so far. The parameters selected for the test run include dating, topography, geomorphology, mean annual temperature, vegetation, biostratigraphy, typology and technology of stone artifacts, organic artifacts, symbolism and human skeletal remains. Michael Märker and his team developed the basic maps on which we will plot the topical results. Patrick Schmidt gathered the basic information about sites, such as location, stratigraphy and dating, while the team specialists contributed data on habitat parameters and cultural remains. The generation of new data will be tested, as will the import of existing data files. The first results, such as topical maps, will be presented at the “Human Expansions and Global Change in the Pleistocene – Problems and Methods” symposium in November, 2009 in Frankfurt. Detailed data analysis on the test run will continue into the spring of 2010.

### Research trips – Data collection

Washington, DC (USA)

In January, 2009 Angela Bruch took part in a planning meeting of the NEOTOMA working group in Washington, DC. There she discussed the adaptation of data from ROAD and NEOTOMA with Eric Grimm. The adaptation of the ROAD database and the standardization of input masks is desired by both sides to facilitate the use and especially the entry of data. Further talks between Eric Grimm and

Michael Märker are needed to meet this target. These discussions are planned during the ROCEEH symposium in November, 2009 in Frankfurt. The NEOTOMA group applied for a NSF project in which ROCEEH should act as a cooperation partner.

### Cape Town and Johannesburg (South Africa)

Christine Hertler visited the Iziko South African Museum to collect data on the paleontological inventories of three localities in the Western Cape (Anyskop Blowout, Geelbek Dunes and Sea Harvest) as a basis for paleo-ecological reconstruction using the method of eco-profiling. Further collections in the archaeological and paleontological departments have been screened and identified as suitable for that method. After Christine Hertler's presentation of the eco-profiling approach using Javanese examples at the archaeological colloquium of the University of Cape Town (UCT), Nikolaas van der Merwe suggested analyzing the isotopes of bovid molars from the Sangiran collection housed at Senckenberg. Perspectives for a joint research project were discussed with John Compton (UCT) which would focus on the confirmation of supposed migration events by faunistic studies. Since the migration events depend on sea level changes and glacial land corridors, the project could be included as part of a planned DFG grant application by Michael Märker and Volker Hochschild.

Angela Bruch met with Marion Bamford of the University of the Witwatersrand in Johannesburg to continue their discussion about the possibilities of a working group on South African Plio-Pleistocene vegetation. A joint analysis of the floral macro-remains (seeds, charcoal) from Sibudu Cave in KwaZulu-Natal has been arranged.

Perspectives for a field school: Makuyuni (Tanzania) 2008 | Photo: A. Gonschior



#### Arusha and Dar es Salaam (Tanzania)

In Arusha Christine Hertler arranged the basics for a field school at Makuyuni, Northern Tanzania, planned for the summer of 2009 together with Charles Saanane. Contacts were renewed with Aaron Nuzinga, manager of a wildlife area on the eastern banks of Lake Manyara, with an intent to use the area for research and training. In Dar es Salaam Christine Hertler and Charles Saanane completed the permit application for the field school. They handed it over to Hulda Gideon from the Commission for Science and Technology, who will take part in the field school, and to Felix Ndunguru from the Department of Antiquities. The Department of Antiquities curates Tanzanian national heritage sites, and the collections from those sites are housed at the National Museum in Dar es Salaam. As the museum was under construction, most collections remain inaccessible until after construction and a planned relocation. Accessible collections were screened for their suitability for further research.

#### Armenia

From June 14 – July 3 ROCEEH added a new excavation and survey project to its list of accomplishments. Led by Andrew Kandel and Boris Gasparyan (Armenian Academy of Sciences), the small field crew conducted four days of survey around the southern town of Sisian and twelve days of excavation at a new cave site known as Aghitu Cave-3. The survey targeted finding new Paleolithic sites around the margins of paleolake Vorotan. The survey examined areas of



Armenian-German 2009 project team | Photo: Diana Zardaryan

low topographic relief above the paleolake level that would have been conducive to occupation by early hominins about 1.6–1.0 Ma, when basalt from volcanic eruptions dammed the Vorotan river. While no new sites were discovered during the brief opportunities for survey, we gained a better understanding of the regional landscape.

Most of this year's energies were focused on Aghitu, where we excavated the first stratified Upper Paleolithic cave site known in Armenia. The presence of obsidian blades and bladelets, well preserved fauna and ample charcoal remains was a first in Armenia. Thanks to the good organic preser-

Armenian landscape | Photo: A. Gonschior



Fossil leaf in Armenian limestone | Photo: A. Gonschior

vation, radiocarbon dates are already in progress, so we will soon know the exact dates of these layers. While we managed to reach a depth of 3.5 m below the surface in twelve days, we did not succeed in discovering the full extent of the sedimentary sequence in this promising cave. The cave is situated at the base of a basalt flow dated to about 120 ka. Future excavation plans will examine the deeper layers, which will require the opening of additional excavation areas.

Additionally, Angela Bruch continued paleobotanical studies in Armenia and Georgia within the framework of the current Caucasus project.

#### Teheran and Tabriz (Iran)

During a 10 day contact visit in May, 2009 Angela Bruch, together with Armenian project partner Ivan Gabrielyan and Steffen Schaarer, a Ph.D. candidate, examined possibilities to expand the research area of the current Caucasus project. Their aim was to identify possible themes, cooperation partners and geological exposures to serve as the basis for subsequent grant applications. After first meetings and screening of existing collections of the Geological Survey of Iran (GSI) an agreement was signed about future cooperation on the reconstruction of Plio-Pleistocene climate and vegetation and a joint project concept. An excursion to the most important outcrops of Plio-Pleistocene sediments in northwestern Iran included well-dated Upper Pleistocene lake sediments near Teheran and a sequence of probable Pliocene lacustrine sediments in the vicinity of Tabriz. All profiles show high potential for absolute dating based on volcanic events. Preliminary examination of random pollen samples will reveal whether the lake sediments can be used as a basis for a joint project. Recent comparative material was collected from the Caucasian hyrcanic forest, a retreat area of interglacial vegetation along the southern coast of the Caspian Sea.

#### Turin (Italy)

In the framework of the VIGONI project, "Pliocene-Pleistocene climatic trends on a latitudinal gradient from NW Germany to Central Italy," Angela Bruch met with Edoardo Martinetto and Elena Vassio. During their twelve day stay,

the research group completed project dates on the Plio-Pleistocene climatic history of Northern Italy and planned a joint publication. Besides the analysis of the climate, focus was placed on methodological issues and the concept of a standardized model for vegetation reconstruction at different spatial scales (local – regional – supraregional). This model will be applied to several Pleistocene floral communities by Elena Vassio in the scope of her doctoral dissertation.

#### Aix-en-Provence (France)

At the first meeting of the Working group on African past vegetation (WAVE) the project initiators (Raymonde Bonnefille, Doris Barboni and Angela Bruch) discussed basic targets and possible activities of the group. A website was created and is now available online ([www.roceeh.net/wave](http://www.roceeh.net/wave)). Cooperative research on East African pollen assemblages studied by Raymonde Bonnefille (including Hadar, Laetoli, Olduvai and Omo) will jointly analyze climate and vegetation. WAVE is conceived to serve as a platform for scientific exchange for paleobotanists working in Africa, and regular meetings are planned. A larger meeting took place in May, 2009 in Addis Ababa, Ethiopia during the second meeting of the East African Quaternary Research Association (EAQUA). The next meeting of WAVE is planned in Frankfurt after the ROCEEH symposium in November, 2009.

### Research highlights

#### An Aurignacian venus figurine

During excavations in 2008 a female mammoth-ivory figurine was discovered in the basal Aurignacian deposit at Hohle Fels cave in the Swabian Jura of southwestern Germany. This figurine was produced at least 35,000 calendar years ago, making it one of the oldest known examples of figurative art. The find predates the well-known venuses from the Gravettian culture by at least 5,000 years and radically changes our views of the spectrum, context and meaning of the earliest Paleolithic art. Two of the six fragments of carved ivory were documented *in situ*. All of the pieces of



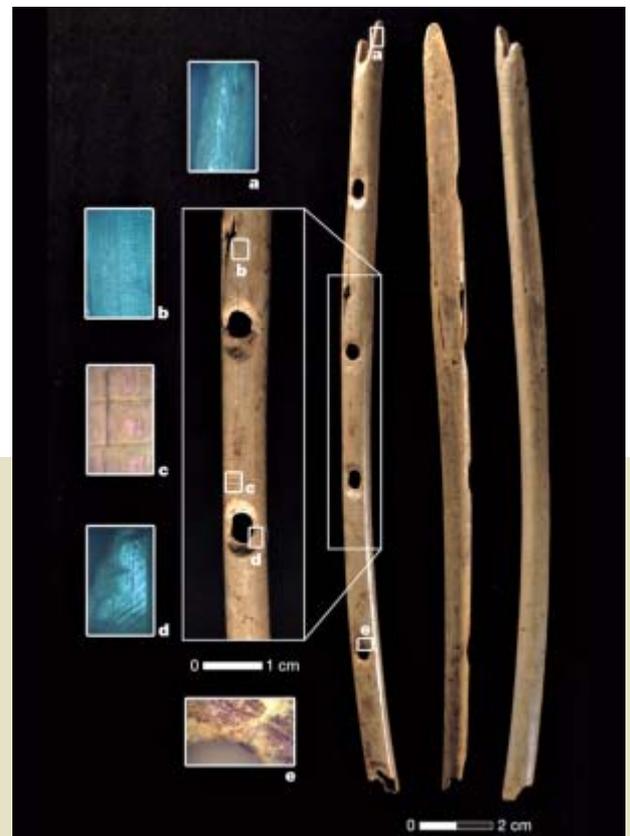
Details of the Hohle Fels venus | Photo: Hilde Jensen

the figurine come from the southwest quadrant of a single square meter and were recovered from within 12 cm in the vertical dimension.

The Venus from Hohle Fels is nearly complete; only the left arm and shoulder are missing. The quarter meter in which the figurine was found borders directly on the western edge of the dig, raising the possibility that the missing portion may be recovered as excavation continues. One fragment was found at the base of archaeological horizon Va, directly overlying archaeological horizon Vb. The remaining five pieces were recovered from archaeological horizon Vb, an approximately 8-cm thick deposit of clayey silt directly overlying the sterile clays that separate the Aurignacian from the underlying Middle Paleolithic strata. (Nature 459, 248)

#### A third cave with Aurignacian flutes

Excavations in the summer of 2008 at the sites of Hohle Fels and Vogelherd in Germany produced new evidence for Paleolithic music in the form of the remains of one nearly complete bone flute and isolated small fragments of three ivory flutes. The most significant of these finds, the bone flute, was recovered in 12 pieces in the basal Aurignacian deposits of archaeological horizon Vb at Hohle Fels Cave in the Ach Valley, 20 km west of Ulm. Eleven of the fragments were documented *in situ* within an 8-cm thick deposit of



The flute from Hohle Fels Cave carved from a radius of a griffon vulture | Photo: Hilde Jensen

clayey silt with limestone clasts. This layer directly overlies a nearly sterile deposit of red-brown, silty clay, separating the basal Aurignacian from the underlying Middle Paleolithic deposits of archaeological horizon VI. This flute, designated Hohle Fels flute 1, is by far the most complete of the musical instruments so far recovered from the caves of Swabia. The finds demonstrate the presence of a well-established musical tradition at the time when modern humans colonized Europe, more than 35,000 calendar years ago. (*Nature* 460, 737)

The excavations at Hohle Fels cave and the analysis of the finds are co-financed by ROCEEH.

### ROCEEH Workshops

“The interaction between environment and human expansions in South Africa”

*Cape Town, 23–24 Feb. 2009.* Thirty-five scientists and graduate students from Cape Town, Bloemfontein, Johannesburg and Germany participated in the first South African ROCEEH workshop. They heard seventeen lectures on a broad range of topics from the fields of geography, geomorphology, habitat and climate reconstruction, biology, paleoanthropology and archaeology. The talks spanned from Oligocene to Holocene and focused on Southern Africa. Several talks presented intriguing ideas about how environmental change can lead to the separation of biological groups and result in speciation events. The workshop spawned a new working group that will examine the effects of changing geography on animal speciation in the Southwestern Cape during glacial times. The workshop also strengthened the ties of a working group that will study African vegetation (WAVE). The complete program including abstracts is available as a pdf on the ROCEEH website. ROCEEH plans to sponsor a workshop in Johannesburg in late 2010 hosted at the University of the Witwatersrand.

### Forthcoming

- 2nd African Association for Palaeoanthropology and Palaeontology (EAAPP) Conference (16–21 Aug. 2009) in Arusha (Tanzania), sponsored by ROCEEH.
- Human Expansions and Global Change in the Pleistocene – Problems and Methods. A joint Symposium of ROCEEH and BiK-F (16–19 Nov. 2009) in Frankfurt/Main (Germany).
- Session Cognitive competence, cultural failure? Is the modernity discussion valid for the Indo-Pacific area? by M. Haidle and Alfred Pawlik. 19th Conference of the Indo-Pacific Prehistory Association (29 Nov.–5 Dec. 2009) in Hanoi (Vietnam).



Andrew Kandel in Armenia | Photo: A. Gonschior

### Who's who?

This issue: Andrew Kandel

After studies in geology, biology and oceanography in Rochester, (New York), St. Croix (United States Virgin Islands) and Seattle (Washington) Andrew Kandel worked for nine years as a consulting geologist in Los Angeles. In 1995 he joined the research team of the Department of Early Prehistory and Quaternary Ecology at the Institute for Pre- and Protohistory and Medieval Archaeology at the Eberhard Karls University of Tübingen. He conducted geological prospection and archaeological surveys in Southern Germany (1996–2001), worked with the Giza Plateau Mapping Project in Cairo, Egypt (2001), coordinated the Geelbek and Anyskop Archaeological Survey Project (GAASP) in South Africa (1998–2009), and administered the *Tübingen- Damaskus Ausgrabungs- und Survey-Projekt* (TDASP) in Syria (1999–2009). Between 2001 and 2008 Andrew Kandel was a Research Associate in the Department of Social History, Division of Pre-colonial Archaeology at the Iziko South African Museum in Cape Town. In 2005 he completed his studies with a dissertation entitled “Comparative Studies in Landscape Archaeology” at the University of Tübingen. Since 2008 Andrew Kandel has been a project archaeologist in the ROCEEH team. In 2008 he also initiated the Tübingen-Armenian Paleolithic Project (TAPP) conducting surveys and excavations in the Caucasus.



Some of the 35 delegates of the ROCEEH workshop in front of the Iziko South African Museum, 24 Feb. 2009.

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