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Guest Editorial

Changing environments and movements through transitions: Paleoanthropological and Prehistorical Research in Ethiopia A Tribute to Prof. Mohammed Umer



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International Continental Scientific Drilling Program. He was a key partner in the Ethiopian Lakes Palaeo-environmental Reconstruction Project, led from Cologne University. The untimely death of Mohammed Umer is a big loss to his numerous colleagues and friends in the international community of palaeoenvironmental research. He was a dedicated and internationally recognized researcher and an ambassador for African science and for PAGES, and a much-valued friend to his many students and colleagues.

1. A Tribute to Prof. Mohammed Umer

This volume is dedicated to the memory of a colleague and friend, Professor Mohammed Umer, a palynologist and palaeo-climatologist, who dedicated his life to the questions and issues raised in this volume before he passed away on November 26, 2011, while conducting fieldwork in the Afar region in Ethiopia. Mohammed Umer was an Associate Professor at the School of Earth Sciences, Addis Ababa University, for 19 years. Mohammed was born on 22 June 1959 in Arsi Robe, a small town on the southeastern Ethiopian Highlands. He graduated from Addis Ababa University with a BSc degree in Geology in 1981, and taught at Asmara University, Eritrea, for five years, before beginning research at the University of Aix-Marseille III, France. His PhD, on the vegetation history of the eastern Ethiopian highlands, was completed in 1992. His subsequent research, which focused largely on the environmental history of Ethiopia, made significant contributions to the understanding of the environmental history of the country. In addition to his teaching and research duties at Addis Ababa University, Mohammed has also served in various academic administration positions including as Associate Dean of the Faculty of Science during 2005–2007. Mohammed was the founder in 2009, and leader of the *Palaeo-environment and Palaeoanthropology Program Unit* at Addis Ababa University. Mohammed served as a member of the PAGES Scientific Steering Committee, as leader of the PAGES Africa 2k Working Group, and of PAGES Science Focus 4 (Past Human–Climate–Ecosystem Interactions). He was a founding member of the East African Quaternary Research Association, and was elected its President in February 2011. He was a member of the executive committee of the International Association of Geomorphologists, and of the steering committee of the Hominid Sites and Paleolakes Drilling Project, funded by the

2. “Movements in Ethiopia, Ethiopia in movement”

The content of this volume originates in the organization of a special panel for the 18th International Conference of Ethiopian Studies (ICES) held in Dire Dawa, Ethiopia, in October–November 2012. This conference addressed the issue of “movements” in its broadest sense: studies on social, religious, political, and cultural movements but also on circulation of words, ideas and peoples; the dynamics of contacts and exchanges; the effect of intellectual or economic change on societies; as well as “movement” in its concrete physical and spatial meaning at different time and geographical scales. Our contribution to this conference meant to address different levels of understanding of the concept of “movement” in prehistoric archaeology and human evolution, especially in Ethiopia that is alternately considered to be a cradle, point of origin for dispersal, or a refugium zone, of human populations. The concept of “movement” was tackled through multidisciplinary studies, using empirical data from researched sites, and focuses on the palaeoenvironmental–palaeoclimatic background to Middle and Upper Pleistocene paleoanthropological record and on the archaeological expressions of the behavioral, chronological and territorial changes, their significance and implications within Ethiopia and the Horn of Africa.

From a chronological perspective, this volume addresses a large time span extending from the late Lower Pleistocene with the example of the Acheulean of Melka Kunture, to the shift to the agro-pastoralist economy during the Holocene in the Horn of Africa. On this large time scale, the different papers emphasize the processes of cultural regionalization, expansion and *in-situ* evolution, which characterize these gradual or radical changes mainly during the MSA and LSA periods, relying on studies of subsistence strategies, land use patterns and technological systems.

3. Paleoanthropological and Prehistorical Research in Ethiopia

Currently, active research projects investigate various parts of Ethiopia and are generating new data on the Ethiopian Prehistory. The oldest sequences reported here are those from the wide area of Melka Kunture open-air sites complex, in the Upper Awash Valley close to the escarpment west of the Main Ethiopian Rift (MER). The accurate lithic studies of Garba XIII (Gallotti et al.) and Garba III (Mussi et al.), Acheulean and MSA sites respectively, offer sound data enhancing our understanding of those insufficiently known phases of the Ethiopian Prehistory. Those sites are located in important geological sequences that benefit from long-term multidisciplinary investigations, among which the study of magnetostratigraphy. The analysis is carried out in four stratigraphic sections: Garba-IV, Gombore-I, Gombore-II and Simbiro (Tamrat et al.). The magnetostratigraphic correlation for these sites, in addition to the available Ar–Ar dates, can be used to calculate relative ages for the various faunal and artifact findings at the Melka-Kunture archaeological site, improving the understanding of Pleistocene archaeological environments.

The Acheulean site of Garba XIII presented by Gallotti et al. is newly discovered and focuses specifically on the technological analysis of the lithic material. It reveals the collection of large boulders at the primary source in order to produce the blanks for Large Cutting Tools (LCT), mainly cleavers and bifaces that show a standardized faconnage. Their blanks are usually extracted by the Kombewa method, while the small debitage is preferentially carried out following the Discoid method. There is a differential raw material procurement strategy following the objectives of the production and a temporal and spatial fragmentation of the LCT chaînes opératoires. Although this important paper was not presented at the conference, it was integrated to this volume because a more recent site of the Garba location is also described: Garba III.

Garba III of Melka Kunture is an early Middle Stone Age site, probably not younger than Isotope Stage 5e. This multidisciplinary study by Mussi et al. reinvestigates the complex site formation processes, the lithic technology but also three cranial fragments, possibly from “archaic” *Homo sapiens*. The lithic industry, mainly in obsidian, shows its own specificities by the abundance of denticulates and scaled pieces, but is typically MSA in the coexistence of shaping and Levallois concept for blank production. Some discrete features are underlined, such as the presence of a small Nubian 1 core, a type that is described in other obsidian-dominant MSA sites of the MER such as K’one (Kurashina, 1978) and Gademotta (Wendorf and Schild, 1974; Douze, 2013).

The open-air MSA sites of the Gademotta Formation are located ~60 km southeast of Melka Kunture, on top of the rim of the Quaternary hoof-shaped Gademotta caldera in the central part of the MER. A specific technical process is targeted in the study of the obsidian assemblages of different sites, which involves the removal of a lateral spall from the tip of convergent tools (points). K. Douze gives a description of the recurrent technical steps involved in this specific knapping process and discusses its function. This process is presented as a chrono-cultural marker, as it is specific to the oldest sites of the Formation, older than ca. 183 ka, and has not been recognized elsewhere, except among the collected obsidian points of the nearby sites of Tiya, drawn by Jousseau (1995). Gademotta sites are located some 100 m above the present level of the lake Ziway, part of the Ziway-Shala lacustrine system, that is also investigated in this volume by Menard et al.

Menard et al. describe a series of five sites located in the Bulbula River channel, linking lake Ziway to Lake Abiyata, in the middle of the central part of the MER. They document the end of the MSA (~34,000–33,000 Cal BP) to the transition between the Pleistocene

and the Holocene (~14,000 and 11,000 Cal BP). While the industries are all oriented towards the production of blades, there are significant and well described differences in the knapping methods to produce those blades and in the blade characteristics. The oldest phase shows a preference for unworked tool edges, even though some unifacial points occur, while the recent phase shows an important production of microliths. The early Holocene assemblages on one hand show the production of tanged points and the use of pressure flaking and on the other hand a microlithic industry where burin spalls are often used as tool blanks. The study of techno-economical changes that show a high variability in the assemblages is fully integrated to the environmental events identified in the lacustrine system, highlighting important ruptures in both records especially between the end of the MIS 3 and the beginning of the MIS 1.

To the north, following the margins of the southeastern Ethiopian plateau, several dynamic multidisciplinary projects are also investigating this renewed focus of research: the potential factors underpinning these transitions, environmental conditions and the dynamics of technological innovation between the end of the MSA and the LSA towards the Holocene. Contrary to the open-air sites of the MER, the eastern highlands offer karst contexts, such as Porc-Epic and Goda Buticha caves (Pleurdeau et al., Leplongeon) and a series of newly surveyed cave sites in the area (Assefa et al.) that revealed speleothems, lithic industries, faunal remains, used ochre, beads, human remains and rock-art. Along the eastern end of the escarpment of the southeastern Ethiopian plateau, beyond the Ethiopian border, in Somaliland, Diaz et al. describe a karst context with archaeological assemblages that are referred as being Hargeisan.

Diaz et al. present their analysis of the lithic assemblages of Shelter 7 of Laas Geel, located in Somaliland. Through the sequence, two main archaeological phases are recognised. The upper part of the sequence is clearly LSA, with a bladelet based production mainly, and is compared to the Somaliland Wilton as defined elsewhere (Clark, 1954; Brandt, 1986), while the lower part features an industry combining MSA and LSA characteristics. Beside the blade and bladelet production, typical Levallois elements are identified as well as unifacial points. Therefore, Diaz et al. re-evaluate the existence of the Hargeisan Industry, a transitional “facies” between the MSA and the LSA, first defined by Clark (1954) but criticized for long. This study focuses on the central question of the MSA/LSA transition pointed by other papers of this volume although it is the only study that proposes a specific cultural attribution, namely the Hargeisan.

Porc-Epic site is the oldest known site of the southeastern Ethiopian highlands and have been the focus of many research projects in the past (e.g. Breuil et al., 1951; Clark and Williamson, 1984; Pleurdeau, 2004). However, the new analysis of the MSA and LSA ochre remains of Porc-Epic (the richest known collection of pigmental material) carried out by Rosso et al. offers a detailed assessment of their spatial distribution through the deposits with the main aim of evaluating the integrity of the cave filling. These new insights based on the ochre spatial distribution suggest minor reworking of the cave deposits and highlights displacements in specific ochre processing areas during the different occupation phases of the cave.

Leplongeon emphasizes on the MSA and LSA lithic industries of Porc-Epic in combination with the results obtained from her analysis of the newly discovered Goda Buticha cave (Assefa et al.), located some 35 km west of the Porc-Epic site. This work revises the criteria of definition of microliths, the significance of their presence in the studied assemblages and their validity as a typotechnological marker for the LSA. Both sites show Pleistocene/MSA assemblages with very few microliths, and Holocene/LSA

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