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Les premières expansions humaines en Eurasie à partir de l'Afrique
Facteurs limitant ou favorisant

The oldest human expansions in Eurasia
Favouring and limiting factors

Colloque international organisé au Muséum National d'Histoire Naturelle, Paris
Département de Préhistoire
Auditorium de la Grande Galerie et de l'Evolution
26, 27, 28 novembre 2008

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Abstract

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The Thomas Quarry I, first investigated by P. Biberson (1961a and b), was made famous in 1969 with the discovery by Ph. Beriro of a half-mandible, first attributed to *Atlanthropus mauritanicus* by Ennouchi (1969), but more recently considered as a representative of *Homo rhodesiensis* (Hublin, 2001). In 1985, further investigations revealed the presence of a *Lower Acheulian* assemblage in marly limestones at the bottom of the section (Raynal et Texier, 1989), but it was only from 1988 onwards that modern controlled excavations have been undertaken, within the framework of the Franco-Moroccan co-operative project *Casablanca.*

The stratigraphy of the quarry is complex. It represents several major episodes of coastal sedimentation that are dated to the Lower and Middle Pleistocene on the basis of a detailed regional lithostratigraphical and microfaciological study (El Graoui, 1994; Lefèvre, 2000; Lefèvre et Raynal, 2002; Texier *et al.*, 1994, 2002). Moreover, a continental sediments preserved in a cave belonging to a polyphase paleo-shoreline date to the Middle and Upper Pleistocene on lithostratigraphical and biochronological evidence (Geraads, 1980, 2002; Hossini, 2002). In the Hominid Cave (GH), the general stratigraphy shows at the top a red complex with abundant microfauna (stratigraphic unit 1). Below this, a multilayer dripstone floor (stratigraphic unit 2) caps the lower stratigraphic units (4 and 5). Stratigraphic unit 4 contains artefacts, fauna and hominid fossils and rests on collapsed eolianite blocks imbedded in coarse sands which form stratigraphic unit 5; this lowermost intertidal unit fossilize the notch of the polyphase shoreline (Raynal *et al.*, 1995, 2001, 2002).

The lithic assemblage recovered by recent excavations in GH stratigraphic unit 4 is similar to the series collected at the time of the discovery of the first *Homo* fossil in 1969 (Geraads *et al.*, 1980). It is manufactured mainly on various quartzites available close to the site as blocks and pebbles and a few flint nodules collected from beach deposits. It consists of pebble-tools (mainly unifacial choppers with a few removals) and core-tools, semi-cortical flakes obtained by direct and bipolar flaking, along with rare small handaxes/handaxe-like cores, hammerstones and anvils. As do the upper occupations of the nearby Rhinoceros Cave (GDR) in Oulad Hamida 1 quarry, the GH series represents a facies of the *Acheulian*.

Besides a few reptiles (*Testudo* sp.) and birds, the associated mammalian macrofauna is rich. Primates: *Theropithecus oswaldi*, *Homo* sp. Carnivores: *Herpestes ichneumon, Hyaena hyaena*, *Felis* cf. *libyca*, *Panthera* cf. *leo*, cf. *Nyctereutes* sp., *Vulpes* sp., *Lycaon* cf. *magnus*, *Mellivora capensis*,

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Lutra sp., *Ursus bibersoni, Monachus* sp. Artiodactyla: *Kolpochoerus* sp., *Phacochoerus africanus,* Bovini, *Gazella* cf. *atlantica,* Hippotragini, Alcelaphini cf. *Parmularius* sp., *Connochaetes taurinus prognu* Perissodactyla: *Equus* cf. *mauritanicus Ceratotherium mauritanicum* Rodents: *Hystrix cristata, Paraethomys tighennifae, Praomys darelbeidae, Mus* sp., *Gerbillus* cf. *campestris, Gerbillus grandis, Meriones* cf. *maghrebianus, Meriones* cf. *maximus, Ellobius* cf. *atlanticus, Eliomys* sp. Lagomorpha: Lagomorpha indet. Insectivores: *Crocidura* sp. Chiroptera: Chiroptera indet.
This faunal assemblage clearly belongs to the same faunal set as the one from GDR whose age lies between 435 ± 85 and 737 ± 129 ka (Rhodes *et al.,* 2006), but some elements show that the assemblage from Thomas GH is earlier. Among large mammals, the suid *Kolpochoerus* is represented by scrappy remains but whose identification is almost certain. It is a widespread genus in East African sites, in the Late Pliocene of Ahl al Oughlam, and is also present in Thomas Quarry I level L; based on the dates of Hominid Cave (see below), this site records its last appearance in North Africa. Some rodents are also distinct from those of GDR. *Meriones* is represented by the same two species, but they are smaller, suggesting an earlier age. *Eliomys* is smaller than *E. darelbeidae* from GDR. Lastly, a lower molar of *Ellobius* has a notched anterior lobe of m1, reminiscent of Tighenif, whereas those from GDR are rounded.

In the macrofauna collected in the central part of the cave during excavations prior to 2005, carnivores were abundant (43% of NISP) while antelopes (25% of NISP) and gazelles (20% of NISP) were dominant among herbivores. Carnivores were considered as the first agent for bone accumulation (Bernoussi, 1997). In the faunal spectrum from recent excavations in the south-eastern part of the cave (2005-2008), cf. *Nyctereutes* sp. is dominant among carnivores (34 % of NISP), and gazelles and other antelopes among herbivores (respectively 31.9 % and 17.1 % of NISP). Preliminary taphonomical analysis of the megafauna shows that the carcasses were processed by carnivores and that cut-marks are absent, which raises the question of the human role in the bone accumulations. Moreover, geological studies have demonstrated that this unit has been partly re-deposited by run-off which mixed human artefacts with the bones accumulated by predators.

Four teeth of *Homo* have been recovered in stratigraphic unit 4 between 1994 and 2005: a right upper premolar (Th1 94 OA 23-24), another right upper premolar (Th1 95 SA 26 n° 89), a first left upper incisivor (Th1 95 SA 26 n° 90) and a left upper premolar (Th1 2005 PA 24 n° 107). The teeth are large relative to living humans, and show moderate to heavy wear. It was not possible to quantify crown formation or enamel thickness due to the degree of attrition. Phase contrast synchrotron microtomographic imaging revealed enamel microstructure in one premolar.

The first right upper premolar discovered in 1994 has been dated using laser ablation ICP-MS. Dating procedures followed those applied to the Banyoles mandible (Grün *et al.* 2006). Combining the ESR and U-series data for the modelling of the U-uptake (Grün *et al.* 1988), an US/ESR age of 501^{+94}_{-76} ka is obtained (with associated p-values of 1.43 ± 0.59 and 0.75 ± 0.45 for enamel and dentine, respectively). Sediment samples were used for OSL dating. The OSL measurement followed the procedures applied in previous studies of the Pleistocene successions of Casablanca (Rhodes *et al.* 2006). The sample above the tooth yielded an age of 420 ± 34 ka and the one below 391 ± 32 ka. These results are in agreement with an earlier OSL study, which bracketed the age between 360 and 470 ka. Nevertheless, lithostratigraphy and biochronology suggest that this is a minimum age.

Hominid Cave at Thomas Quarry I is vast, and large parts of its deposit are still under study. The preliminary dates, as well as biostratigraphy and lithostratigraphy point towards a greater antiquity for the human fossils than was previously estimated. Thomas Quarry I Hominid Cave is one of the very rare African key-sites for studying individuals and techno-economic behaviors related to a crucial period of human evolution during which Norh African and European populations started to diverge

biologically.

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