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A diachronic perspective on the Palaeolithic occupations at Kesselt–*Op de Schans*

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1. Geographical and geological settings

The brickyard quarry of Kesselt-*Op de Schans* is located in the south-eastern part of the Province of Limburg. The quarry covers a narrow stretch of land measuring approximately 5.4 hectares located between border posts 85 and 84. In the west, the quarry is confined by the *Kanaalweg*, which runs parallel to the Albert Canal, while its eastern limit is constituted by the border with the Netherlands, west of Maastricht. In the north and the south, the quarry is located between the *Drinkelingsweg* and the *Vlijtingerweg*. The area is characterised by a smoothly undulating landscape with the rivers east of the Campine Plateau draining into the Jeker and the Maas. The current topography of the area between Vroenhoven and Lanaken is dominated by WSW-ENE oriented ridges with large valleys in between. The brickyard quarry Kesselt-*Op de Schans* is located on the most southern ridge, at an altitude of about +93 m A.S.L. between the (dry) valleys of the *Hezerwater* in the north and the *Vroenhovenwater* in the south.

In the course of the Pleistocene the topography of the area changed dramatically. During this period tectonic activity combined with the alternation of glacial and interglacial periods, caused repeated shifts in the course of the river Meuse, resulting in the formation of an extensive terrace system (van den Berg, 1996; van den Berg & van Hoof, 2001). Due to its progressive shift to the northwest, eroding the underlying Paleogene and Cretaceous deposits belonging to the Sint-Huibrechts-Hern Formation (Laga *et al.*, 2001) and the Maastricht Formation (Robaszynski *et al.*, 2001). Today, the terraces are mainly preserved on the eastern valley slope. An exception is formed by the Pietersberg 2 phase — dated to M.I.S. 22 according to van den Berg and van Hoof (2001) — during which the Maas migrated far into the west, depositing a fan of gravel and gravelly sands belonging to the Zutendaal Formation and forming the Campine Plateau (Gullentops *et al.*, 2001). The following middle terraces[1] are only locally preserved on this left bank of the river, associated with a cut-off meander complex situated between Vroenhoven and Lanaken (Felder *et al.*, 1989; Meijs, 2002, s.d.). This incision acted as a sediment trap for the preservation of a loess sequence of more than 10 m thick belonging to the Gembloux Formation, (Gullentops *et al.*, 2001), deposited on top of the terraces after the Meuse moved away from the area. Here, the presence of this ancient meander bend allowed the preservation of a set of pre-Weichselian loess deposits, dating back to M.I.S. 12 and locally thus encompassing a long stratigraphic record with five loess cycles and intercalated palaeosols (Meijs, 2002, s.d.).

2. Archaeology

The exploitation of the brickyard quarry Kesselt-*Op de Schans*, as well as that of the allotments more to the north (*Op de Spaniestraat*) started in 2000. In the top levels, several features belonging to the Late Bronze Age, the Iron Age and to the Roman period were found (Pauwels *et al.*, 2003; Pauwels & Vynckier, 2005; Vanderhoeven *et al.*, 2006[a]; Vanderhoeven *et al.*, 2006[b]; Wesemael, 2006; Pauwels, 2007; Vanderbeken & Wesemael, 2010)[2]. It has been suggested that the toponym *Op de Schans* might refer to the presence of defence works in the form of a large V-shaped ditch dating from around the time of the Siege of Maastricht in 1632 (Pauwels, 2007; Vanderbeken & Wesemael, 2010).

Beneath these Holocene archaeological remains, several Middle Palaeolithic assemblages were discovered.

In 2001, a Middle Palaeolithic assemblage (not published) was found at Kesselt-*Op de Spaniestraat* in a truncated luvisol representing the upper part of the Rocourt Pedocomplex (Gullentops & Meijs, 2002). Based on its stratigraphic position, comparable to that of the VBLB assemblage from Veldwezelt-*Hezerwater*, this small assemblage was dated to M.I.S. 5 (de Warrimont, 2007).

[1] *Sensu* Paulissen (1970).

[2] In the publications reporting on the excavation campaigns between 2000 and 2005 confusion has arisen regarding the use of local toponyms and/or place names in this area. Wesemael (2006) addresses the investigation of Kesselt-*Op de Spaniestraat*, while another series of articles (Pauwels *et al.*, 2003; Pauwels & Vynckier, 2005; Vanderhoeven *et al.*, 2006[a]; Pauwels, 2007) discusses the excavations conducted at both *Op de Spaniestraat* and *Op de Schans*.

In 2005, a total area of 56 m² was excavated at Kesselt-*Op de Schans* (Vroomans *et al.*, 2006). During these investigations an assemblage composed of ca. 90 artefacts was found in a colluvial deposit, covered by late Weichselian loess. Filling a gully cutting through an underlying (unidentified) palaeosol, the colluvium was provisionally dated to M.I.S. 3 or older (Vroomans *et al.*, 2006). It has also been suggested that the colluvium represents (partly) reworked sediment from the upper luvisol of the Rocourt pedocomplex dated to M.I.S. 5a (E. Meijs, personal communication 2009), similar to the 2001 assemblage. In addition to a large number of flakes and flake fragments (most of these smaller than 2 cm), two side-scrapers and one offset side scraper were present within the assemblage (fig. 1). Three types of flint were differentiated, probably representing locally collected raw materials: a light grey flint showing light inclusions near the cortex, a dark grey flint with dark inclusions and a beige specked flint type. Whereas most artefacts attributed to the first flint type were rather fresh, those made in the dark grey flint displayed some wind varnish, suggesting that these were not immediately covered after their abandonment. The third flint type, on the other hand, was only represented by one flake. In general, the assemblage is interpreted as reflecting a short term knapping activity, taking place near a gully (Vroomans *et al.*, 2006).

In 2007, one isolated artefact has also been found associated with the Hees luvisol (M.I.S. 7), present within the northern part of the Kesselt–*Op de Schans* quarry (E. Meijs, personal communication 2007; Van Baelen & Ryssaert, this volume; Pirson & Di Modica, this volume).

Elsewhere in the quarry, this palaeosol has been eroded during a severe period of wind-water erosion taking place during M.I.S. 6. This erosion phase, resulting in the formation of a polar desert pavement, led to important topographical changes and the creation of large gaps in loess sequences. It was responsible for the erosion of the upper part of the C- loess containing the two youngest tundrasols, which can be observed in the most distinct (*i.e.* highest) topographic areas. In association with this erosional contact (also referred to as Hazendans discordance; Meijs, 2002, s.d.) a few isolated and wind varnished artefacts have also been found representing older displaced artefacts.

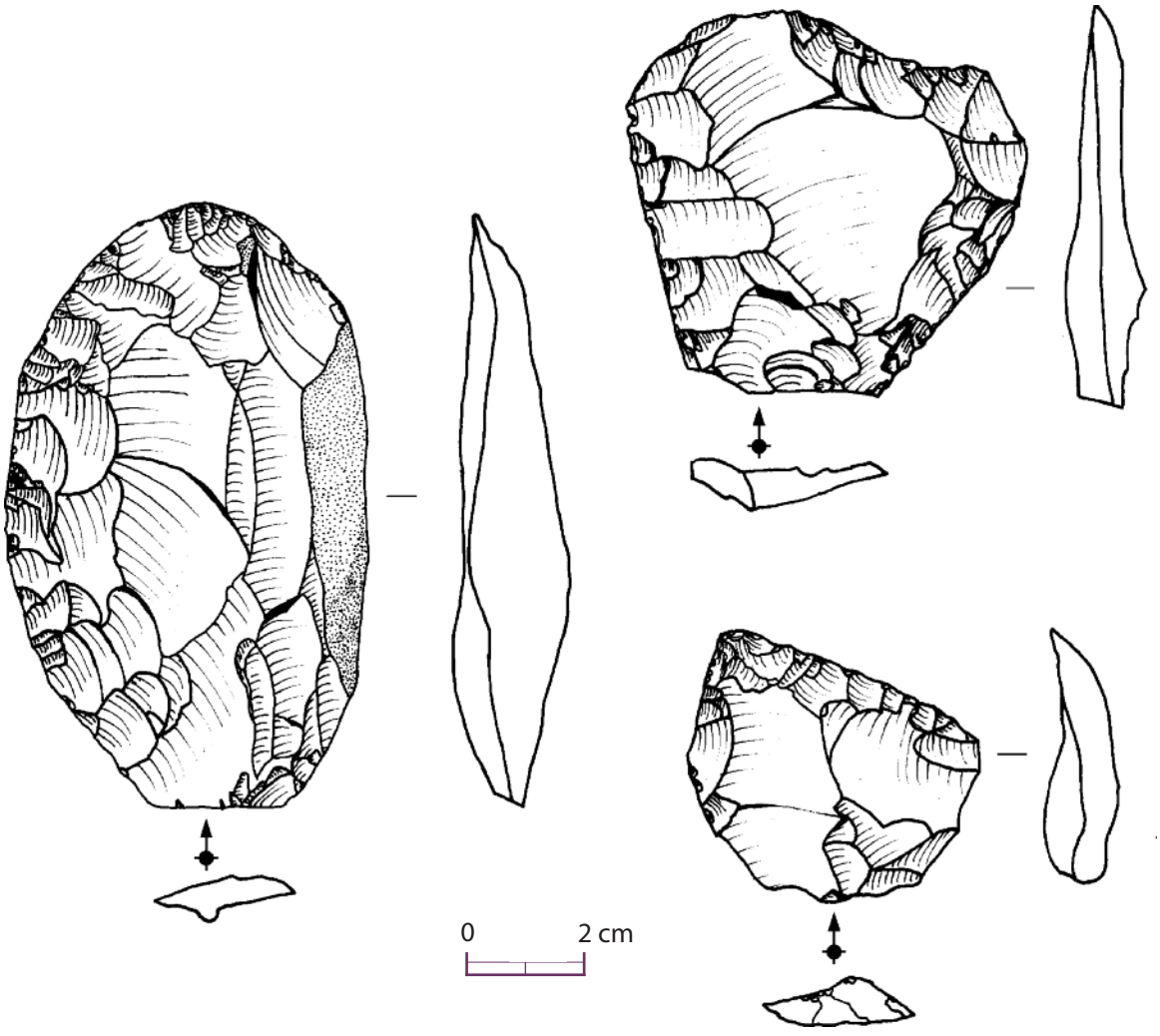


Fig. 1
Lithic material found during the 2005 excavation campaign.

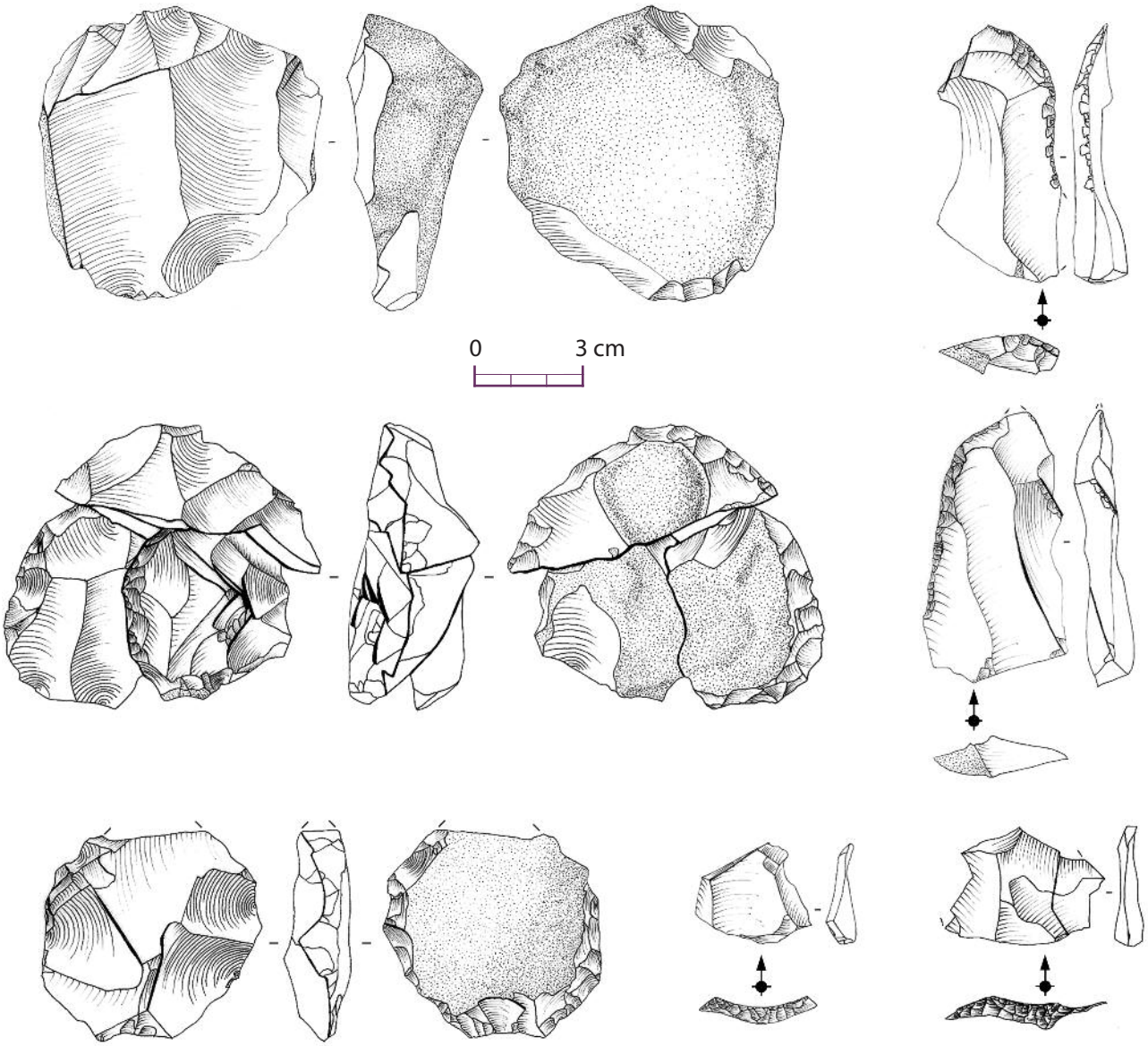
In 2007 and 2008, four small *in situ* knapping floors were found (ODS 1-4), deposited on top of a palaeosurface that was dated to the transition from M.I.S. 9 to M.I.S. 8, based on its stratigraphic position (Van Baelen *et al.*, 2007; Van Baelen *et al.*, 2008; fig. 2). The most eastern cluster (ODS 1) was located ca. 6 m beneath and 30 m south of the assemblage excavated in 2005. Additionally, somewhat beneath this ODS 1 cluster, a gravel layer present on top of a truncated polygenetic luvisol (Pottenberg-Montenaken) yielded a small number of mostly rolled and heavily patinated artefacts. These reworked artefacts can probably be considered as predating the end of the Pottenberg luvisol formation (M.I.S. 11), situated at around 390.000 B.P. (Meijs, 2002, s.d.).

Fig. 2
Lithic material found during the excavation campaigns in 2007 and 2008.

Additionally, a side-scraper and a handaxe have been discovered in a similar stratigraphic position in the north-eastern part of the quarry. The precise date of these artefacts however, still requires some further study.

3. Conclusion

At Kesselt-*Op de Schans* six, perhaps seven, different stratigraphic levels have yielded Palaeolithic artefacts, dating from > 390.000 B.P. to the Weichselian. This brief overview illustrates the importance and large potential of the loess quarries in Southeast Limburg in contributing to our knowledge on Neandertal and pre-Neandertal presence in this part of the Meuse basin. As some of these levels clearly contain *in situ* artefacts scatters, information regarding the spatial organisation of the lithic *chaîne opératoire* can be inferred as well.



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