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Krems-Wachtberg excavations 2005–12: Main profiles, sampling, stratigraphy, and site formation

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ABSTRACT

Since 2005, detailed archaeological investigations have been carried out at the Upper Palaeolithic site of Krems-Wachtberg in eastern Austria where a well-preserved Gravettian find layer is embedded in an 8 m high Late Pleistocene loess sequence. The excavations are accompanied by interdisciplinary sampling strategies applied on the main profiles' entire sediment series as well as on selected locations within the archaeological context. The latter include both evident anthropogenic structures, an in situ occupation surface with hearths and burials, and periglacial features that together determine the morphology and explain the formation of the main Gravettian find horizon.

1. Introduction

The Wachtberg hill is situated above the right bank of the Krems river on the loess-covered south slope of a promontory overlooking the Danube, shortly below its narrow passage through the Bohemian Massif, referred to as the Wachau valley. Here, the Danube flowed into the Tullnerfeld basin forming a wide alluvial fan. In the Late Pleistocene, this was probably (at least temporarily) an open gravel plain. Today, as part of the city of Krems, the Wachtberg is a developing residential area and being gradually sealed by construction. It is not only the location of an Upper Palaeolithic site cluster including Krems-Hundssteig and Krems-Wachtberg, but also hosts older sediments as documented in the profile of Krems-Schießstätte (Verginis and Rabeder, 1989). At Krems-Hundssteig, tens of thousands of stone artefacts together with the remains of a Late Pleistocene fauna were recovered during the exploitation of loess between 1893 and 1904 (Strobl and Obermaier, 1909). Based on the classification of the lithic inventory, Krems-Hundssteig became known as a classic Early Upper Palaeolithic/Aurignacian site (Laplace, 1970; Hahn, 1977), although a small collection of the same area was determined as Gravettian (Hahn, 1972). Recent excavations of the Austrian Academy of Sciences provided new evidence for the presence of Early, but considerably more extensive Middle Upper Palaeolithic find horizons at the site (Neugebauer-Maresch, 2008). Already in 1930, Josef Bayer conducted an excavation further up the Wachtberg hill (referred to as Krems-Wachtberg, 1930) which exposed part of a Gravettian living floor (Einwögerer, 2000; Fladerer, 2001).

Only ~50 m south from Bayer's excavation, explorative core drillings hit a clearly defined Palaeolithic horizon with a high find density of lithic artefacts, well-preserved faunal remains, and charcoals in a depth of ca 5 m and an extension of about 250 m^2 (Neugebauer-Maresch and Peticzka, 2008; Einwögerer et al., in this volume). The Department of Prehistoric Archaeology (former Prehistoric Commission) of the Austrian Academy of Sciences developed an interdisciplinary research project and fieldwork commenced in 2005.

The first excavation campaign made the loess sequence accessible for study and sampling, as well as already substantiated the archaeological relevance of the site: not only was a rich Gravettian find layer encountered, but also was its base primarily in situ and included several distinct features, most important of which is a double burial of newborns in an excellent state of preservation (Einwögerer et al., 2006, 2008). Subsequent campaigns revealed more anthropogenic structures, among which the most significant are a further infant burial (Einwögerer et al., 2006, 2008), and a multi-phased hearth complex, hearth 1 (Händel et al., 2008, 2009b; Simon et al., in this volume). In the meantime, the limits of the preserved base of the living floor's extent have been reached and crossed in all accessible directions, providing important insights into the processes underlying the disintegration and dislocation of the primary archaeological deposits. Despite the net accumulation of sediment, it was observed in 2005 that the site's prevalent aeolian loess sedimentation had been interrupted by erosional events on several occasions, including stratigraphically directly after the Palaeolithic occupation associated with the in situ features

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(Händel et al., 2009a), but density and nature of the anthropogenic inclusions in the main Gravettian horizon AH 4 enhance macroscopic visibility and therefore enable a more detailed assessment in the field.

2. Main profiles and sampling

The position of the excavation's main profiles is closely connected to the work progress. When fieldwork commenced in 2005, an excavation pit had to be dug to a depth of ~5 m, and a ramp was built to access the pit from the northeast. The orientation of the excavation grid was determined by the given plot boundaries, North and South profiles being parallel to the boundaries of the plot on which the first field campaign was carried out, and West Profile 2005–6 located on the border to the adjacent plot. This induced the position of the first profiles (Fig. 1, profiles 1-3). The North Profile 2005–7/8/12 (Fig. 1, profile 1) was chosen as the main profile for sequential multi-disciplinary sampling of the entire loess series (Händel et al., 2009a). In 2007 the excavation pit was extended ~1.5 m southwest, creating West Profile 2007 (Fig. 1, profile 4). In 2008, major alterations of the excavation area became necessary due to the proposed construction of a residential house above the southwest part of the site. Most of the concerned area had not yet been excavated, so it was agreed upon in a multilateral arrangement to construct a deep basement underneath the house with the financial support of the Government of Lower Austria which would allow archaeological investigations to be continued until 2015 (Neugebauer-Maresch et al., 2012). The sediments in place of the basement's wall foundations had therefore to be excavated, which was undertaken in consideration of the excavation grid (Fig. 1). Legal regulations and a tight work schedule now rendered the documentation of three new profiles of the entire loess sequence impossible, so that only the manually excavated lower ~1 m was recorded in detail. However, the upper part of the sediment sequence could be sampled in three profiles west of the excavation area (Fig. 1, profiles 6-8). Excavations inside the basement from 2009 to 11 resulted in an extension of the main South Profile and creation of West Profile 2009-11 (Fig. 1, profiles 2 and 5).

Interdisciplinary serial sampling focussed mostly on the North Profile 2005–7/8/12, and was carried out at an Easting of the local grid between 102.5 and 106 m (Figs. 2 and 3), as this part was already excavated in 2005 (101–102.5 m in 2007, 98–101 m in 2008, and 104–107 m in 2012). Photographic, metric, graphic, and descriptive documentation, including the definition of sediment boundaries and geological horizons in all profiles preceded sampling. A geological horizon (GH) is defined by the sediment, as opposed to an archaeological horizon (AH) which is defined by the occurrence of anthropogenic material. A GH is therefore always assigned to an AH but not vice-versa. Colour values were determined in the field for each sediment unit using the Munsell Soil Color Chart. The sampling strategy (Fig. 2) included recovering sediment samples at 0.1 m intervals for sedimentological, palaeobotanical and malacological analysis. The previously macroscopically determined horizon boundaries were considered, i.e. samples only contain sediment of a single GH unit. A sediment block with a height of ca 1 m was recovered from the area around the main Gravettian horizon AH 4 for micro-morphological analysis and laboratory sampling. The entire loess sequence was also covered continuously by oriented samples for the investigation of magnetic susceptibility and palaeomagnetism (for sampling method, see Hambach, 2010). Samples were also recovered at regular intervals for different methods of luminescence dating. In this profile however only AH 4 provided organic material for radiocarbon dating. All samples were treated as single finds and thus recorded individually in the field database including their three-dimensional coordinates (Händel, 2010).

West Profile 2005–6/9 is situated at 90° to the North Profile at an Easting of 102.5 m and therefore shows the same stratigraphic

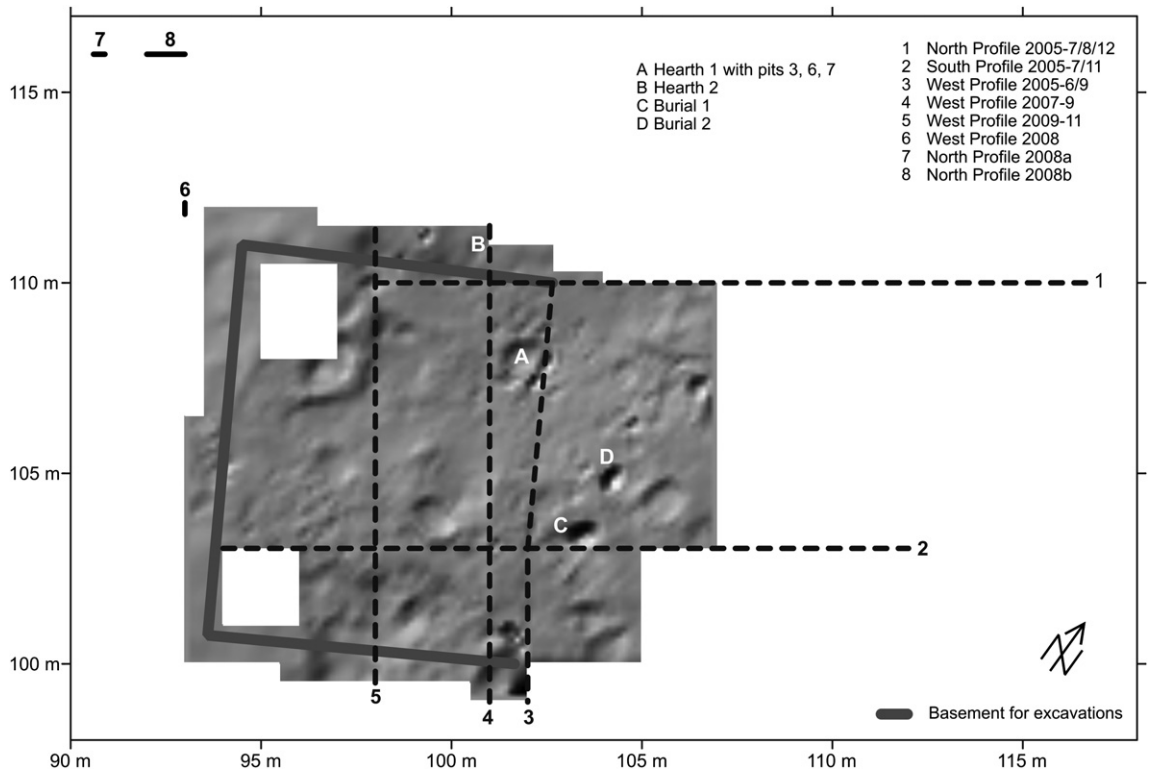

Fig. 1. Krems-Wachtberg 2005–2012: Excavated areas and main profiles. The excavated areas are represented as a surface model of the main Gravettian horizon AH 4's base. The greater part of the basement is already excavated. (Graph: Department of Prehistoric Archaeology, Austrian Academy of Sciences).

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