Introduction

The Glauberg in Hesse, Germany, is a basaltic foothill of the Tertiary Vogelsberg volcano rising 150 m above the fertile Wetterau basin (fig. 1a). In this unique topographic position an impressive Iron Age hillfort is located on top of the plateau (fig. 1b). The discovery of extremely richly furnished ‘princely graves’ (fig. 2) directly to the south of the Glauberg suggests that during the late Hallstatt and early La Tène periods (600 - 250 BC) the Glauberg was the centre of an Iron Age ‘princely’ dynasty. In order to understand the ‘Early processes of centralisation and urbanisation’, and ‘The origin and development of early Celtic ‘princely seats’ and their territories’ research has been taken up at the Glauberg together with other important central European Iron Age sites (e.g. Heuneburg, Ipf, Hohenasperg, Mont Lassois) within a priority research programme (SPP 1171) of the German Science Foundation (DFG). At Glauberg, geoarchaeological studies have been taken up to gain a precise knowledge of the settlement history against the background of landscape development and use. The present study analyses the annex, a complex enclosure of ramparts and ditches on the northern Glauberg slope (fig. 1).

Fieldwork and methods

In 2003 an archaeological trench was excavated through the rampart-ditch system of the annex enlosure (fig. 1b + 3). Soil horizons were classified according to the German Soil Survey description (AG Boden 1994). Soil analyses include the determination of pH-value by the CaCl2 method, grain-size distribution by sieving and sedimentation after Köhn, CaCO3 after Scheibler and total organic carbon by loss-on-ignition. A chronometry was established using 14C-dating of organic components and optical stimulated luminescence (OSL) dating of the mineral grains. We used the single aliquot regeneration (SAR) protocol (Wintle & Murray 2008) adopted for infrared-stimulated (IRSL) fine-grains (Kadereit 2002). It may be applied with varying stimulation/read-out times, which allows closer investigation and detection of insufficient bleaching (fig. 3). This variant of the SAR-protocol seems to improve the analyses of fine-grained colluvial sediments which have been reworked over only short transport distances and maximum ages may be more closely narrowed down. Such analytical improvements are of special interest for geoarchaeological investigations, when relatively young Holocene sediment samples may correspond to a variety of cultural periods in question. IRSL-measurements were carried out on a TL/OSL reader DA12 equipped with an internal 90Sr/90Y-source for β-irradiation (~2 Gy/min), a ring of TEMT484-diodes for IR-stimulation (800 x 800 μm, ~40mW/cm² at sample position) and a photomultiplier EMPIRE724 for OSL-signal detection. Cut-off and preheat were for 120 s @ 220°C, detection of the blue feldspar signal (~ 410 nm) occurred through a set of Schott glass filters (BG39, BG3, GG400, BG3, 3 mm each). For α-value determination external 241-Am-sources (~4.2 Gy/min) were used.

Results

In 2003 archaeological excavations in front of the inner annex rampart uncovered a ditch measuring ca. 11 m in width and about 2.0 m deep (fig. 5). With its gradually sloping inner side and steep outer side, it had an unfamiliar shape. The ditch fill appears to have been washed in from the rampart slope by processes of soil erosion. The existence of the ditch as close (8.6 m) to the outer rampart is surprising, and the relationship between the two rampart-ditch structures must be clarified by future excavations. The stratigraphy of the rampart and ditch is illustrated in figs. 4 + 5. Soil mapping and laboratory analyses of soils and sediments show that the settlement was founded on a strongly gleyic ground. Beneath the ring wall two colluvial sediments had been deposited on top of an eroded stagnic luvisol. Both the colluvia and the body derived from the underlying Bt-Bht periglacial clayey subsoil (III Bv, darker bands of yellow-brown silty clay) and the colluvium layers (II M, lighter bands of grey-brown clayey silt).

Fig. 1: The Glauberg hillfort with the annex on the northern slope of the hill. The “plain” to the south of the Glauberg is associated with a complex system of ramparts and ditches. Most of the earthworks have been levelled, and have been detected by magnetometer prospection.

Fig. 2: View from the North over the tumulus above the princely graves and the surrounding landscape.

Fig. 3: IRSL-dating based on the SAR protocol with varying stimulation/read-out times deriving from 240 s (shortest interval) to 30 s (shortest interval). For each interval 3 aliquots were used. Partial bleaching is indicated by failed plateau tests. The true age is best narrated, if the age is calculated from the groups of aliquots giving the lowest palaeodoses or equivalent doses (DOS), respectively. To improve the precision for sample HDS-1370 an extra measurement with 24 aliquots at 5Ms readout time was carried out.

Fig. 4: Sediment analyses from a profile beneath the inner rampart of the annex.

Fig. 5: Schematic profile through the inner rampart of the annex (right) and the protective ditch (left).

Funding from DFG is gratefully acknowledged.

Annette Kadereit, Ulrich Dehner, Leif Hansen, Christopher Pare & Günther A. Wagner

1 Forschungsstelle Archäometrie der Heidelberger Akademie der Wissenschaften am Max-Planck-Institut für Kernphysik, Saupfercheckweg 1, D-69117 Heidelberg
2 Fachbereich Geowissenschaften, Geographisches Institut, Johannes Gutenberg - Universität Mainz, D-55099 Mainz
3 Institut für Vö- und Frühgeschichte, Johannes Gutenberg - Universität Mainz, Schillerstr. 11 Schönborner Hof - Südflügel, D-55116 Mainz.

email-adresses:
Annette Kadereit: a.kadereit@uni-mainz.de
Ulrich Dehner: u.dehner@geo.uni-mainz.de
Leif Hansen: l.hansen@geo.uni-mainz.de
Christopher Pare: c.pare@uni-mainz.de
Günther A. Wagner: g.wagner@mpl.mpg.de