

Original Study

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Space as the Stage: Understanding the Sacred Landscape Around the Early Celtic Hillfort of the Glauberg

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Abstract: The Early ‘Celtic’¹ hillfort of the Glauberg in Central Germany, some 40 km northeast of Frankfurt, is renowned for its richly furnished burials and particularly for a wholly preserved sandstone statue of an Early Iron Age chief, warrior or hero with a peculiar headgear – one of the earliest life-size figural representations north of the Alps. Despite a long history of research, the basis for the apparent prosperity of the place (i.e., of the people buried here) is still debated, as is the meaning of the settlement site as part of its surrounding landscape. The phenomenon known as ‘princely sites’ is paralleled in the area north and west of the Alps, though each site has a unique set of characteristics. This paper focusses on investigations and new excavations that put the Glauberg with its settlement, burial and ceremonial features into a wider landscape context, including remote sensing approaches (geophysics and LiDAR) as well as viewshed analyses which define the surrounding area based on the Glauberg itself and other burial mounds on the mountains in its vicinity.

Keywords: Sacred places, calendar building, viewshed analyses, hillforts, ‘princely seats’

1 Introduction – The Glauberg, an Early Iron Age ‘Princely Site’

The Late Bronze Age (Urnfield Culture; ca 1.200–780 BC) and Early Iron Age (Late Hallstatt and Early Latène period; ca 650–260 BC) hillfort on the Glauberg, some 40 km northeast of Frankfurt in Germany (fig. 1), has been in the focus of archaeological research since the beginning of the 20th century (Eduard Anthes, unpublished) with larger excavations between 1933 and 1939 by Heinrich Richter (Baitinger, 2011), followed by further field investigations (excavations of the wall on the plateau, three rich burials, and geophysical surveys) between 1985 and 2001 (State Heritage Service of Hesse: Baitinger & Pinsker, 2002; Recker & Rupp, 2018), the analysis of the older excavations on the plateau of the hill (Romano-Germanic Commission of the German Archaeological Institute: Baitinger, 2010), and new excavations (Mainz University: Hansen & Pare,

¹ The term ‘Celtic’ is used here as a technical term only and does not refer to any ethnical interpretation. For a discussion of the different meanings and of the adaptation of this label for the Iron Age see Collis, 2003 and Farley & Hunter, 2015.

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2016) and archaeobotanical research (Frankfurt University: Baitinger, 2010; Stobbe, 2016. State Heritage Service of Hesse: Kreuz & Friedrich, 2014) between 2004 and 2010.

Recent investigations, including excavations and geophysical surveys, have been carried out by the Research Centre of the Keltenwelt am Glauberg [World of the Celts at the Glauberg], mainly focussing on the large ditch/rampart system to the south of the hillfort (fig. 2) and on the settlement on the plateau (Posluschny, 2018a, 2018b, 2019a, 2019b; Posluschny & Röder, 2018, in press; Röder, Gottwald, & Posluschny, 2017a, 2017b, in press; Röder et al., 2018; see Balzer, 2018 for a short summary of the past research activities and Posluschny, 2018c for the perspectives of future research on the Glauberg).

While the Iron Age occupation of the hillfort starts in the late Hallstatt period and ends in a late phase of the Early Latène period (Lt B2, possibly Lt C1; Hansen & Pare, 2016, p. 111), the burials can be dated to a middle or later phase of Latène A. The excavation of three rich burials recovering *inter alia* swords, spear and arrowheads, a shield, bronze flagons, fibulas and golden rings (fig. 3) indicates the social status as members of the local elite. Several of the grave goods are richly decorated in the Early Celtic art style, additionally suggesting their position and connectivity within an elite network. Moreover, the discovery of one fully preserved life-size sandstone statue of an Early Iron Age warrior only lacking its feet/base (fig. 4; <https://sketchfab.com/models/0ef93f371295475298acc73440247fa8>), and the scattered remains of at least three further statues, similar in appearance but fully destroyed (Baitinger & Pinsker, 2002), adorned with symbolic objects, is paralleled by those recovered in one of the burials, finalised the impression, that the Glauberg was one of those ‘Princely Seats’ (‘Fürstensitze’) of the Early Iron Age (mid 1st millennium BC), known mainly from southwestern Germany. However, the reason why the site became so rich and possibly important is still under discussion. Interpretations range from the Glauberg being a trading point on one of the main routes reaching from the fertile Wetterau Loess region and the area of the rivers Rhine and Main towards northeast via the Vogelsberg massif (Baitinger, 2008, pp. 17–19), the importance of agriculture as the basis for wealth (Kreuz & Friedrich, 2014) or possible religious or cultic meanings (cf. Posluschny, 2017 with a summary of the discussion regarding the Early Celtic ‘Princely Sites’).

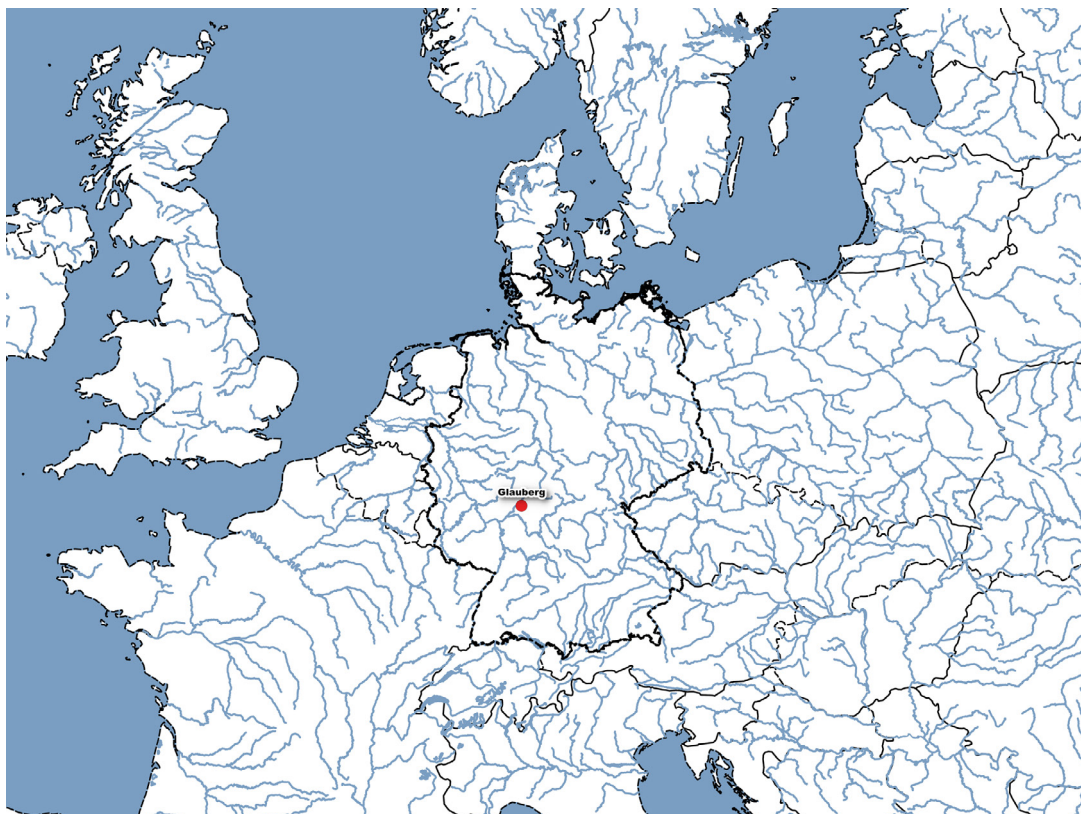


Figure 1. Map of Europe with the localisation of the Glauberg site near Frankfurt/Germany (graphic: A. G. Posluschny).

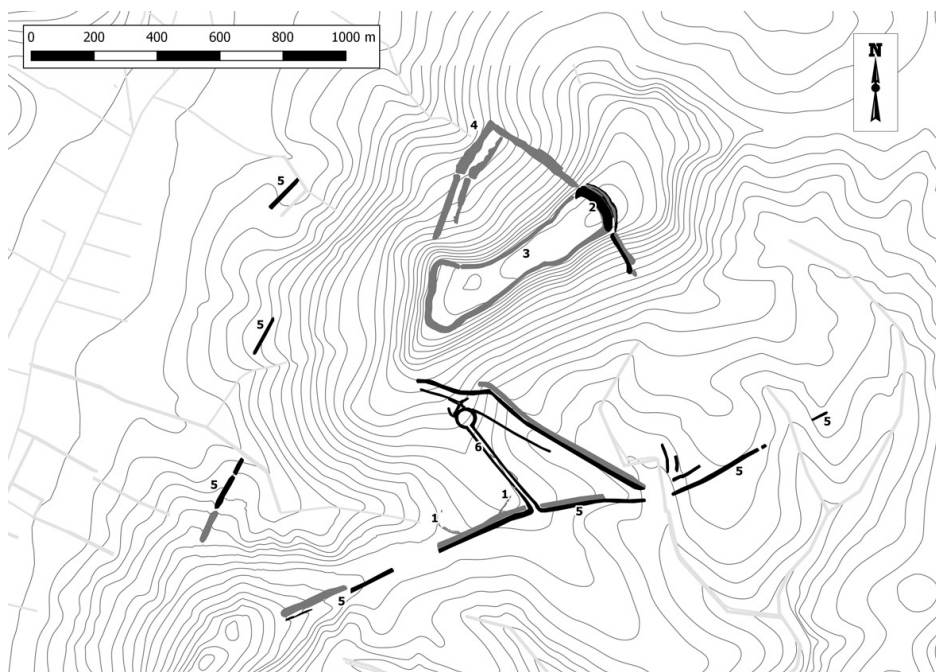


Figure 2. Map of the Glauberg with its various fortification systems. 1: Middle Neolithic (Rössen Culture) ditch; 2: Late Bronze Age (Urnfield Culture) promontory wall; 3: Iron Age (Late Hallstatt and Early Latène) wall surrounding the plateau; 4: Iron Age (Early Latène) annexe wall; 5: Iron Age (Early Latène) ditch/rampart system; 6: Iron Age (Early Latène) 'processional avenue' (map: A. G. Posluschny, contour lines based on Mainz University surveys).



Figure 3. Gold finds from the Early Celtic 'Princely Grave' 1 from the Glauberg (photo: Pavel Odvody, hessenARCHÄOLOGIE).

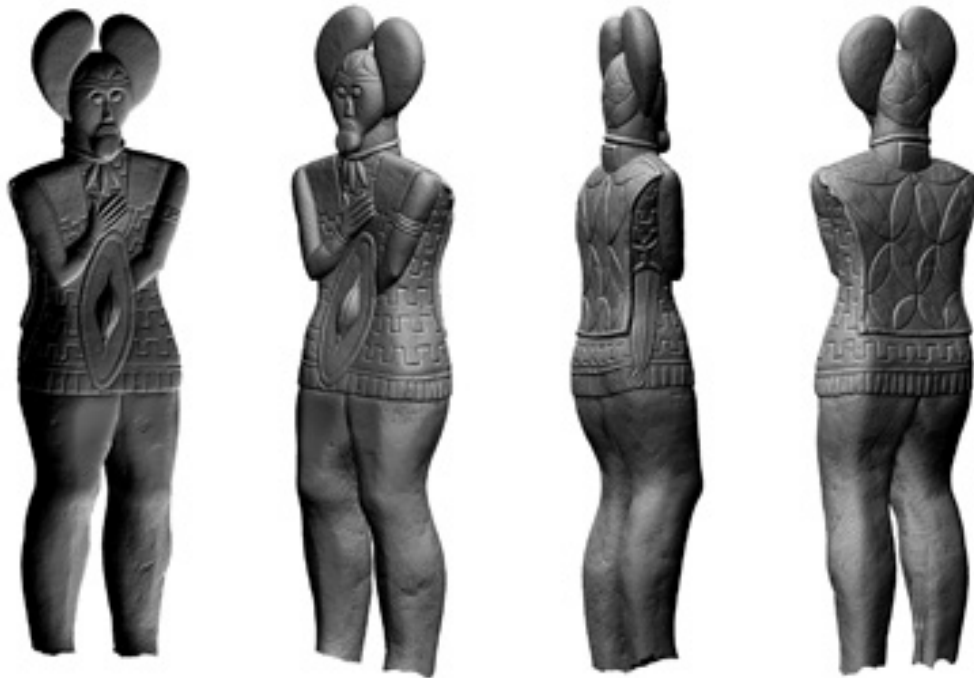


Figure 4. Screenshot of the 3D scan of the life-size sandstone statue from the Glauberg (3D model and image: R. Shaw/G. Devlin, *The Discovery Programme*).

2 Methods

In order to understand the reasons of the importance of the Glauberg site from an economic point of view, it seems prudent to focus on aspects that put the site into its landscape context, reflecting on existing features of the site itself, and also embedding it into the nearer environs within the broader landscape.

Using different levels of scale when trying to understand the perceptual aspects of the sites is crucial to avoid misinterpretations based on a restricted perspective of the phenomenon ‘Fürstensitz’. This paper focusses on three levels: starting with the site itself and on one specific feature that relates to a calendrical meaning, then trying to understand some of the Glauberg’s features as an embodiment of a transitional zone between the living and the dead within the nearer environs, and finally looking at the site as part of a wider landscapes with the surrounding burial places structuring the visible land.

This approach is based on the results of excavations, geophysical surveys, LiDAR data visualisations as well as cartographic and quantitative analyses based on toolsets provided by geographical information systems (GIS; see e.g. Llobera, 1996 or Wheatley & Gillings, 2001). The aim here is to widen a very often rather eco-deterministic point of view of such analyses by adding a somewhat more perceptual aspect (see e.g. De Reu, 2012; Bourgeois, 2013). Nevertheless, GIS are seen here as a potential means to overcome problems of a solely post-processional and perceptive approach that may lack objectivity when being based mainly on modern days, subjective perceptions of scholars (for a fundamental critique on post-processional landscape archaeology see Fleming, 2006). The main advantage of using GIS is the fact that it is based on archaeological and environmental data – which makes it a useful tool due to the reproducible nature of the results.

However, the conclusion drawn from this data can be questioned (as can be any archaeological interpretation) hence they are here presented as one of many possible scenarios that could help to understand aspects of worship and sacredness of the Glauberg in its surrounding landscape and moreover the overall importance of the Glauberg in the Early Iron Age

3 Results & Discussion

Some intermediate results of the research and the analyses undertaken will be presented here according to the different levels of scale that have been in the respective focus. However, the Glauberg as an Early Celtic site has to be approached from a holistic perspective: all perceivable aspects and scales have to be considered to sufficiently permeate the complex meaning of the sites with its various outstanding features as part of a landscape.

3.1 A Sacred Place – Calendar Building, a ‘Processional Avenue’ and Spheres of Living and Dead

Interpretation of the sacredness of a site in non-literate past societies is limited mainly to assumptions about observable and classifiable evidence of rituals, perhaps aided by non-contemporary literature or bias observations from people outside of that culture. Early Iron Age religion north of the Alps fulfils these criteria. Ritualisation as the ‘formalisation and repetition of behaviour, though, are not solely refined to sacral settings, many recurring mundane activities’ are likewise ritualised (Insoll, 2011). Moreover, the sacred and the profane often blend into each other and therefore would deeply root in many practices, the ritual distinguished by the presence of symbolism from routine (Bradley, 2005; Goody, 1977).

The attribution of the Glauberg ensemble to the category of sacred places is not simply based on the presence of burial mounds on the southwestern slope underneath the hillfort. Rather, a set of features in the surroundings of the burials induce the area as a venue of ritualised activity (fig. 5). The impression is supported by findings and their contexts such as the intact sandstone statue detected in the northwest area of the ditch system surrounding the central burial mound. Additionally, the fragments of further statues hint to the recurring procedure of erection (and – intentional – destruction?).

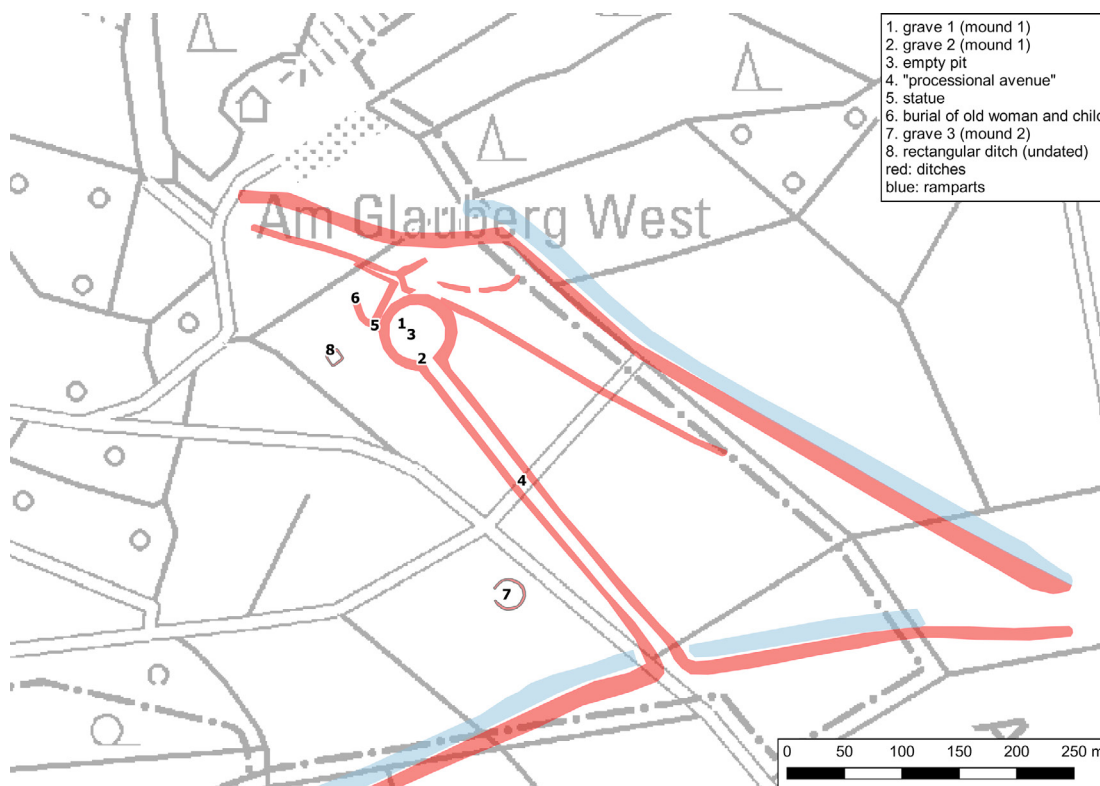


Figure 5. Excavation plan showing the position of the main features in and around burial mound 1 (graphic: Axel G. Posluschny).



Figure 6. View from the south towards the reconstructed burial mound 1 and the partly reconstructed ‘processional avenue’ with the excavation site from 2017 in the foreground (photo: Axel G. Posluschny).

One of the striking and so far, unique features is the so-called processional avenue (fig. 5.4; fig. 6). It is a stretch of two parallel ditches that run downhill from the ditch surrounding the main burial mound and after 335 meters turning west and east respectively, forming the great ditch/rampart system that runs – interrupted by several gaps – along with the southern slopes of the hill (fig. 2.6).

It is not clear if this ‘processional avenue’ has ever been used for processions. Archaeological evidence for such activities would, of course, be very sparse (see e.g. Narimanishvili et al., 2018; Newman, 2007). Any procession coming uphill from the open end of the ‘avenue’ would end up on the mound with no connection to the burials within and with no way to get into the area surrounded by the ‘processional avenue’ and the ditch/rampart system (like the presumably sacred area directly north of the mound). It does not seem to make sense to make a procession in that direction, nor would it make sense to walk downhill as there is no obvious starting point available within the area surrounded by the ditches (unless one would see the burial mound and the attached ‘processional avenue’ as part of rites of passage of the buried persons under the mound). Nevertheless, the phrase is still used here referring to Williamson (2014, p. 87), who describes mobile practices “such as processions” to “connect successive places of significance and require a linear kind of ritual space, such as sacred roads, but also **lines of sight**” (emphasis added). At the Hill of Tara (Co. Meath, Ireland) a ‘processional avenue’ (the so-called banquet hall) appears not only to lead to the central area, where ancestor burials lie next to or within central ring ditch sanctuaries, but they also connect Tara with potentially responding features and sites in the surrounding landscape, that are visible through gaps in the walls/embankments of the procession corridor (Newman, 2007). Absolute dating for the ‘banquet hall’ at Tara is not yet established, though relational observations might hint to a relative date as far back as the Bronze Age (ibid.). The orientation and the line of sight plays a role regarding the Glauberg’s ‘processional avenue’ as the specific orientation of the two parallel ditches forming the ‘avenue’ aiming southwest, are pointing at the point of the Major Lunar Standstill at moonrise, using a line of sight to this very specific spot within the landscape. The event of a Major Lunar Standstill occurs every 18.6 years and, thus, is a perfect means to observe time in space, allowing to measure and predict both for shorter and longer periods (see Deiss, 2008 and Sims, 2016, with further examples of archaeological sites). Whether several posts that had been erected in direct vicinity to the burial mound and the ditch surrounding it, have also been part of such a calendrical building is still under discussion (Posluschny, 2018, pp. 464–466). However, it is striking that the area around the main burial mound has not merely been a ritual area due to

the presence of the ancestors buried in their graves. Ceremonies might have been performed aided by the calendar that is potentially symbolised by the ‘processional avenue’ and some of the structures created by the posts at its northeastern end. It also seems highly likely that a person or a group of persons that was able to ‘read the moon’ played a special and important role in its society, equipped with power and status that supported the marked role of the Glauberg within its landscape.

Studying such phenomena as the Major Lunar Standstill which covers a period of nearly one generation is, of course, the result of a long-lasting observation which makes it rather unlikely that only one person was involved in this discovery. Therefore, it seems very likely that the calendar structure, created by the ditches of the ‘processional avenue’ may have had predecessors whose remains have been destroyed when digging the ditches or which would not have left any archaeological traces as they were created by structures above ground or even by planting bushes or other species to symbolise the orientation towards the Lunar Standstill.

So far it seems as if there had been a hiatus between the Late Bronze Age settlement and the Early Iron Age settlement on the plateau. However, it might hypothetically be possible that a structure visualising the orientation towards the Major Lunar Standstill was already erected in the Late Bronze Age, surviving as visible structure even over a period in which the plateau was not (densely) inhabited and which was revived at some point at the end of the Early Iron Age. The fact that a Late Bronze Age burial ground was found with one rich stone cist burial directly in the orientation of the ‘processional avenue’ some 670 m from its end (Hansen & Pare, 2007) might indicate that this special orientation might already have played a role roughly 20 generations before the burial mound, the ditch around it and the two ditches aiming towards the Major Lunar Standstill had been built.

Several of other hints might show the presence of other ritual practices. Two burials have been excavated in one of the ditches adjacent to the ditch around the burial mound (fig. 5.6). The inhumation of a 60–70-year-old woman and a roughly 1-year-old child in an annexe of the ditch surrounding the burial mound could be interpreted as remains of rituals that were part of the burial ceremonies or as a building sacrifice. Burials within ditches around burial mounds, especially in a complex ditch system as annexe of a ditch surrounding a burial mound, as it is the case at the Glauberg, are not known from other Early Iron Age burial mounds so far. The exact meaning of these two burials therefore remains unclear though there is no doubt that the way of burying is not common practice in the Early Latène period and hence might hint towards a religious or ritual background.

A second noticeable yet not fully understood feature is an empty pit that has been found in the centre of the large mound 1 (fig. 5.3; note that the two burials – fig. 5.1 and 5.2 – were found in exocentric positions within the mound). It was dug into the lowest layer of the deposit of the burial mound so can be dated to the same period as this building (Baitinger, 2010, p. 138). Its regular quadratic shape with vertical walls makes it very unlikely that it is the remains of a shaft that was dug by looters. The excavator reports that the pit was dug as part of the funerary ceremonies when parts of the mound (its lower layers) were already in place (Herrmann, 2002, p. 99). Baitinger (2010, p. 138) argues against the pit being a cenotaph because of its quadratic shape and because it was dug only 50 cm into the ground while the grave pits of grave 1 and 2 have been dug 2.50 m and 1.40 m respectively. As there is little to no clear evidence for cenotaphs in other Early Iron Age burial areas north of the Alps, we do not know if the shape and the depth would contradict the idea of a cenotaph. The depth might have been enough to symbolize a burial. Baitinger suggests – referring to ancient Greek practices as described, e.g. in the *Odyssey* – that the pit could have been part of sacred activities, e.g. for oblations and libations (Baitinger, 2010, p. 138). The geographical and chronological gap between the events described in Homer’s *Odyssey* and the Early Latène burials in Hesse might be too large to be used as a blueprint to draw concrete conclusions but no matter if the pit was a cenotaph or part of offering processes it seems to be rather clear that it might have had ritual or religious purposes, adding another aspect to the sacredness of the area of and around the large burial mound covering graves 1 and 2.

It might be worth noting two other observations that have been made during the excavations in the 1990s. A small rectangular ditch was discovered only 70 m from the centre of burial mound 1 (fig. 5.8). Its dating and its purpose remain unclear as no datable finds have been discovered. It is, therefore, possible but not capable of proof that the structure also was part of the Sacred Area. The statue which has been

found in the ditch northeast of mound 1 (fig. 5.5) was described as intentionally buried (Herrmann, *passim*). However, after careful reconsideration of the excavation's documentation and plans Klausmann (2018) has just recently shown that the statue slipped from a higher position (from the mound or from the rims of the ditch?) into the ditch and came to a halt at one of the posts standing in the ditch. Further post holes – clearly not related to any house building – have been found in and around the ditch. Their meaning is under discussion (they could be referring to the calendric building cf. Deiss, 2008) and currently part of an analysis undertaken by Maria Messingschlager (Bamberg University) as part of her PhD thesis dealing with the Glauberg's burials within their context. However, the statue's burial cannot clearly be attributed to ritual practices in and around mound 1. The existence of a sandstone statue which has clear parallels to one of the persons buried in the mound (and the existence of at least three more statues that have been entirely destroyed) is itself a hint for a cult, possibly one that refers to the ancestors or 'heroes' from the Glauberg's graves.

Considering that the area that we now interpret as a sacred or ritual place is situated on the slopes of the Glauberg it does not come as a surprise that no apparent remains of any other ritual or funerary practices other than the features described above could have been documented. Any structures that left marks directly on the surface or not too deep underneath it has been either ploughed away, destroyed by erosion or by the reallocation and consolidation of agricultural landholdings in the 20th century. The evidence nevertheless is substantial enough to understand not just the burials but also their immediate surrounding as a sacred place. The sacred meaning behind it is based on knowledge (cumulated over generations), which makes the knowing person(s) more powerful than the rest of society. A site with such a powerful individual or a group of powerful people gains more power itself hence it may be argued that the knowledge and the sacred status based thereupon could have been the basis for the Glauberg's status.

3.2 Embedded in the Environs – a Hillfort, a Gigantic Rampart/Ditch System and a Hidden Burial

Moving from the smaller scale of one set of features to the direct environs of the Glauberg adds another aspect to the idea of a sacred space. The ditch/rampart system surrounding the Glauberg hill mainly on its southern slopes has never been completed (fig. 2.4). Nevertheless, evidence from LiDAR scans, geophysical surveys and from excavations reveal the impressive size of the construction that is nowadays only visible in a short stretch under the forest canopy of the nearby Enzheimer Kopf hill (Hansen & Pare, 2016, pp. 29–32; Posluschny & Röder, 2018, in press). A V-shaped ditch of about 5 m depth (due to erosion its depth in the Early Iron Age might have even been significantly deeper) and more than 15 m width is running east and west from the end of the 'processional avenue'. A rampart piled up from the spoil heap from digging the ditch was running parallel in at least some of its sections. The structure must have formed an impressive building but was only vaguely visible in the 1960s (Richter, 1969, p. 27) and has since been nearly completely destroyed by ploughing and erosion.

The most striking features of the rampart/ditch system are the many gaps, the gigantic layout as well as the fact that the prevailing parts of the system do not run along a crest or rim of the terrain (as should be expected for a structure that is used for defensive purposes) but rather on the Glauberg's slopes. These observations raise the question if the system could have been used as a fortification for defence purposes at all (Posluschny, 2019). Baitinger suggested an interpretation which explains the system as a well-planned architectural structure to create a visible impact and especially a visual axis towards the likewise impressive burial mound 1 (Baitinger, 2008, p. 19). The sizes of both ditch and especially the accompanying rampart support this idea. However, some more perceptual aspects might have also played a role.

During the excavations 2017 the team from the Glauberg's Research Centre discovered a female burial directly underneath the former rampart west of the end of the 'processional avenue' (fig. 7; Posluschny & Röder, 2018). The striking fact of this burial was its dating. Two bronze arm rings that had been found have a parallel in one of the arm rings from grave 1 in mound 1 – the so-called 'princely grave'. Taking into account the usual operating life of these objects, the deposition time of the burial underneath the rampart and the 'princely grave' would possibly be not more than one generation. We know that the rampart/ditch system

– as prolongation of the ‘processional avenue’ and hence of the ditch around burial mound 1 – has been built not too long after the two persons in mound 1 have been interred. In fact, at the time of the ramparts’ building, the existence of a burial in this area should have been known.

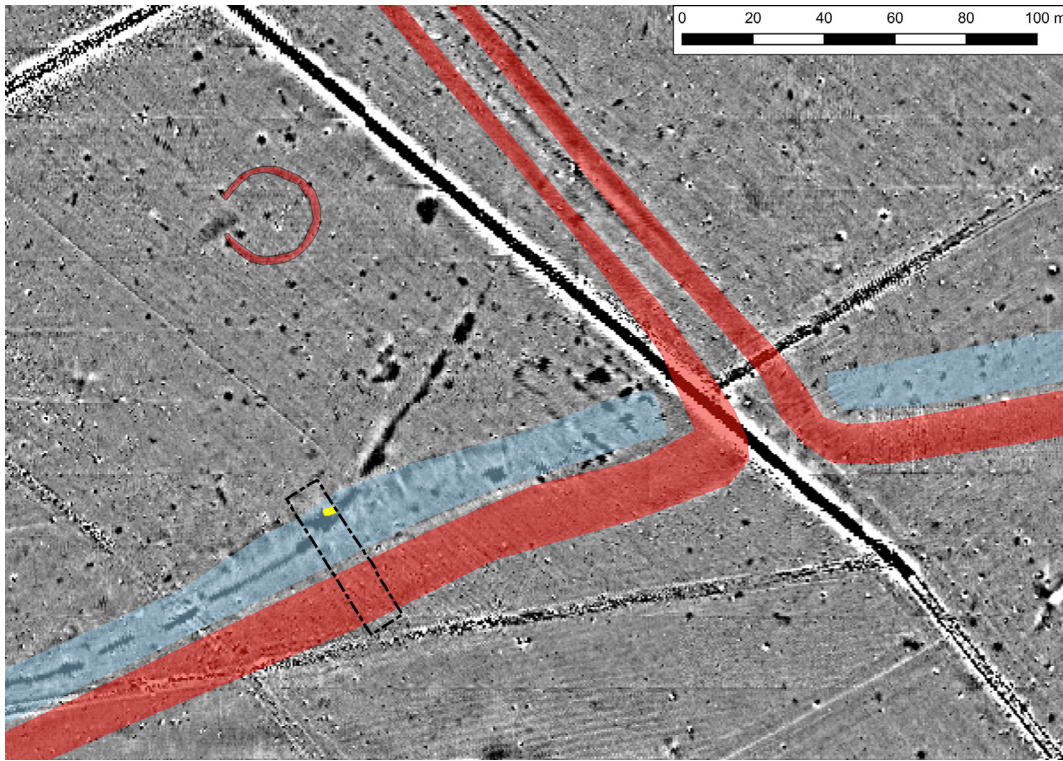


Figure 7. Map showing the position of the grave (yellow) under the rampart of the ditch/rampart system. The gradiometer data in the background shows the stretch of a Middle Neolithic ditch as a clear black feature (graphic: Axel G. Posluschny).

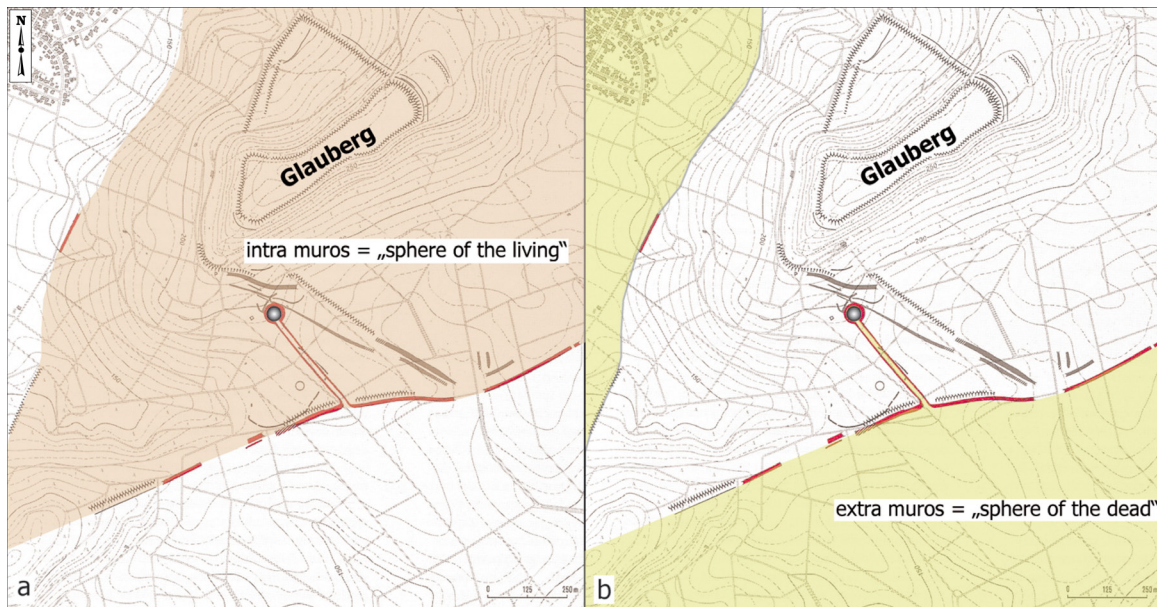


Figure 8. ‘Sphere of living’ (a) vs. ‘sphere of the dead’ (b) around the Glauberg ‘princely graves’ (graphic: Axel G. Posluschny).

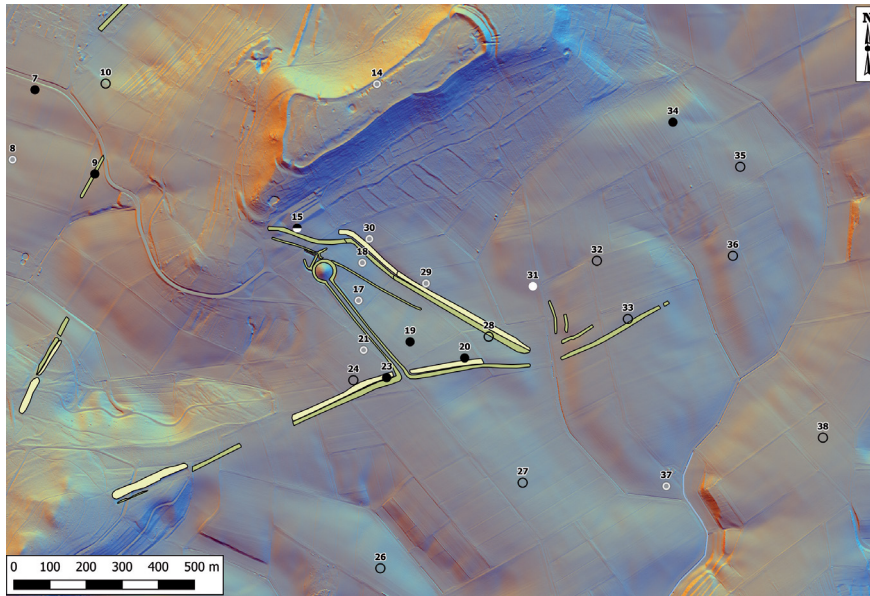


Figure 9. Iron Age settlement features and stray find-spots from systematic field walking in the vicinity of the ‘princely’ graves (based on Hansen/Pare, 2016: Liste 3). Black: older than the ‘princely’ graves; white: younger than the ‘princely’ graves; grey: possibly contemporary to the ‘princely’ graves; blank outlines: Iron Age, no precise dating possible (graphic: Axel G. Posluschny, based on the multiple directions hillshading LiDAR data visualisation, courtesy of Hessisches Landesamt für Bodennagement und Geoinformationen).

Nevertheless, this new structure seemed to have been even more important than respecting the ancestors. Maybe a new group or new generation took over the responsibility on the Glauberg who wanted to show their power by erecting the gigantic system around the hill, possibly neglecting the existence of an ancestor’s grave on purpose (Posluschny, 2019a)? However, to impress was only one purpose of the ditch/rampart system, another one might have been its function to bind the society together. The system as we know from excavation and especially from the geophysical data was never completed. Several gaps interrupt its stretch and seem to indicate that the building was done in different sections or stages. The effort to dig a more than 5 m deep ditch with only wooden tools was rather high, so this was done by a larger group from the society, possibly including people from the surrounding villages as well. It makes sense to think of these kinds of activities as part of a gathering where people living on and belonging to the Glauberg’s wider social group met at the Glauberg to undertake collective work, possibly followed by a common feeding and feasting – activities that have the potential to unite members of a group, or even define a group and its members (e.g. Sallaberger, 2012). It might also help to strengthen the power of a ruling group or class by manifesting their wealth and their hospitality (Bray, 2012, p. 199; Dietler, 2001, p. 88). But the lines of the ‘processional avenue’ with the attached ditch/rampart system also created a visible border, a very clear demarcation in the landscape which divides the area *intra-muros* from the area *extra-muros*, or in other words, the world of the living (settlement) from the world of the death (burial area). It is worth pointing out, that the burial mound with the two rich graves plays a dual role in this scenario: on the one hand, it is included in the sphere of the living as it is placed in the area inside the extensive ditch/rampart system (fig. 8a). On the other hand, it is excluded from this area and part of the sphere of the dead by the specific layout of the ditch: it winds around the mound in a keyhole shape and only opens to the southeast via the stretch of the ‘processional avenue’ as an extension from this surrounding ditch (fig. 8b). The majority of stray finds from the southern slopes of the Glauberg (fig. 9) currently seems to date into the period of the ‘princely graves’ or later when they are situated inside the area marked by the ditch/rampart system. Only one find-spot (fig. 9.37) that might be contemporary to the rich graves lies outside of this area. However, the dating for the pottery found here is not very precise to be sure that people settled here at the time when the ditch/rampart system was under construction or already in place – the finds could also date to the previous late Hallstatt

period when the ditch and rampart were not existent. The distribution of all other dated settlement remains in that area shows an apparent preference for the zone inside the ditch/rampart around the lower slopes of the Glauberg.

The burial mound and the area around embedded in the settlement system of the Glauberg represent a dualism of both – a profane and a sacred aspect. Moreover, it becomes a transitional zone between the two spheres of the living and the dead.

3.3 Embedded in the Landscape – Burial Mounds in the Vicinity

The Glauberg, its dwellings and the burials with the sacred area around were embedded in a broader landscape as well – a landscape that was the economic background for its inhabitants, providing the primary resources including food, water, pasture land, wood and other basic commodities. The area around the Glauberg could have also provided such demanded and precious resources like salt or iron ore but it is currently not clear (though potentially possible) if these have already been exploited in the Iron Age (for a discussion of the mediaeval and early modern exploitation of mainly iron and salt see Schuppert, 2016, pp. 140–142).

Apart from the more economic aspects of the landscape, the wider area around the Glauberg might also have had a meaning in a spiritual way, based on different perceptions of different persons and groups (Tilley, 1994). The approach that is chosen here to try to understand the role of the landscape as a stage for cultural, ritual, sacred or spiritual aspects refers to the understanding that cult, religion and ritual practices seem to be essential to human nature (and culture) while at the same time it tries to apply a more science-based approach, namely using techniques provided by geographical information systems.

The analyses of some of the Glauberg's main archaeological features as part of the direct environs have shown that visibility (e.g. lunar events that could have been observed from the sacred area around the main burial mound or concerning the symbolic meaning of the extensive rampart/ditch system) seems to have played a crucial role for the sacredness of the site. According to the first definition of a 'Princely Seat' ('Fürstensitz'), published by Kimmig in 1969, the prominence of the hillfort is one of the main criteria to call it a 'Princely Seat'. Prominence – which could also be described as visibility – is dependent on the scale at which one describes it (for a different approach to prominence cf. Llobera, 2001). A hill might be very prominent within its direct surroundings but might as well be far from being prominent when considering the wider landscape around. This observation is applicable to the Glauberg. The viewshed analyses from all contemporary settlement sites in the wider landscape around the Glauberg (fig. 10) has shown, that it could have only been seen from five out of 69 settlement sites from the Hallstatt and from none of the 14 Early Latène settlements (a recently discovered and still unpublished Early Latène settlement in Altenstadt-Höchst, 7 km southwest of the Glauberg, was not known at the time of the calculation but had a clear line of sight towards the Glauberg). The hill only appears rather impressive when approached from the valley to its southwest, but it was somewhat hidden between the valleys of two smaller streams.

However, the area around the hillfort was surrounded (and marked) by a number of burials mounds at the rim of the visible space (fig. 11). It must be noted that most of the mounds are not dated yet. However, burials in larger mounds predominantly date to the Middle Bronze and Early Iron Age, so it is very likely that they are contemporaneous to the Iron Age structures of the Glauberg or at least could have still been visible as burial places of the (Bronze Age) ancestors. Many of these burial mounds at the rim of the visible zone are either single mounds or have maximum one or two neighbours. They could be interpreted as markers in the landscape, limiting the direct sphere of the Glauberg and also marking another sphere of the dead beyond the immediate agricultural environs – again making space as a stage in a social and/or religious perspective. Most notably is the fact that the Glauberg is situated in a transitional zone between different environmental units (fig. 11): the fertile Wetterau region with its large Loess areas (suitable for growing crops) and the hilly Vogelsberg region with forests (suitable for cattle farming).

One might argue that the distribution of burial mounds today significantly differs from the distribution some 2500 years ago, it is quite likely that some burials that were situated in nowadays un-forested areas have been destroyed over the last centuries mainly by ploughing. However, the lack of burial mounds in the

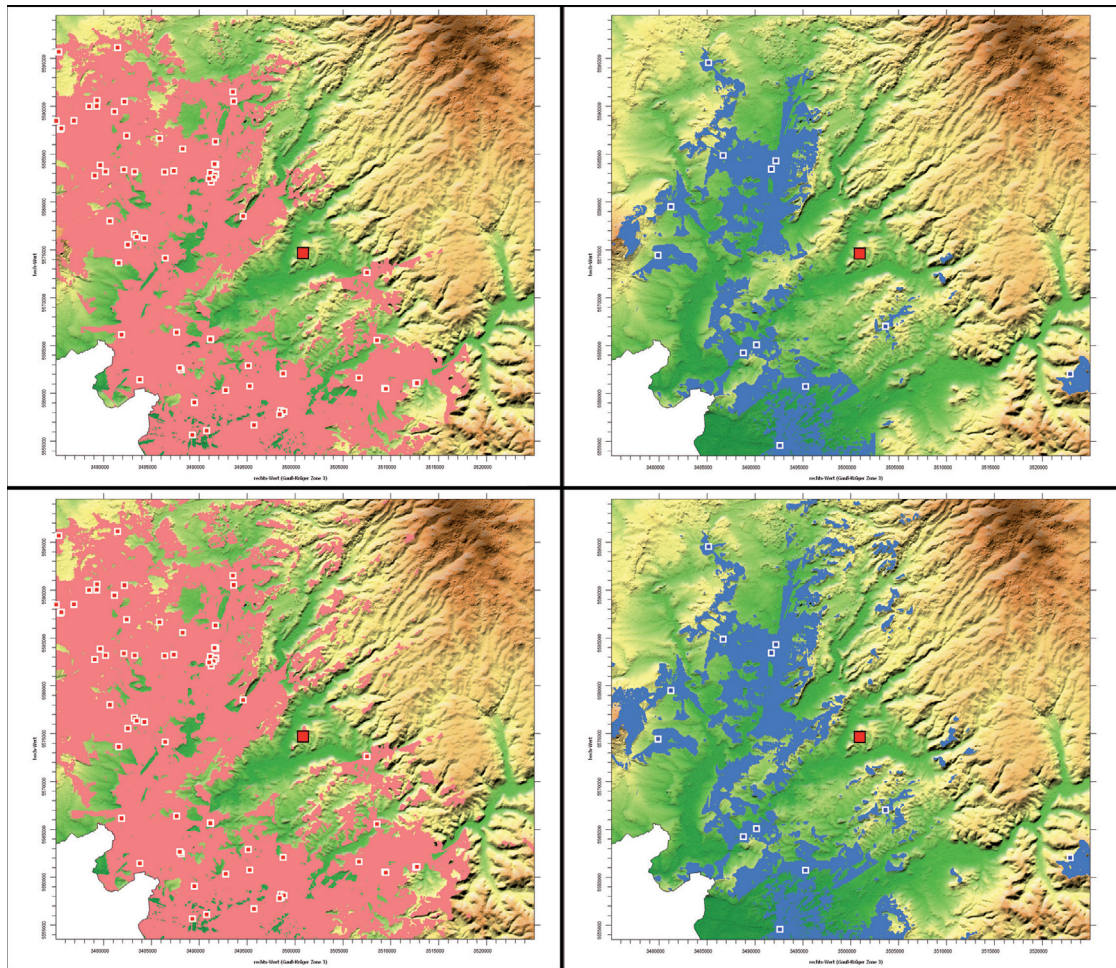


Figure 10. Cumulated 10 km viewsheds of the Hallstatt settlements (left, visible area in red) and the Early Latène settlements (right, visible area in blue) in the area around the Glauberg. The Glauberg in the centre is marked in red. Top: 10 km visibility; bottom: 20 km visibility (graphic: Axel G. Posluschny, based on the 25m resolution DGM50/M745, courtesy Bundesamt für Kartographie und Geodäsie 2004).

forested (and therefore protected) areas on the slopes and hills northwest and southeast of the Glauberg is still significant whereas larger numbers of mounds have been preserved in the forests in the plains of the valley leading southwest of the Glauberg (fig. 12). Moreover, the use of LiDAR data would have revealed the existence of at least some of the (former) burial mounds in areas nowadays in fields (fig. 13).

It has been shown that the large amount of grave mounds and burial grounds with numerous mounds southwest of the Glauberg can be seen from the plateau and the settlements on the slopes (fig. 12). It is noticeable that this is the only area where at least some of the mounds are not as clearly placed on the rim of the visible zone so – depending of course on the size of the mounds, weather conditions and vegetation larger mounds would possibly be vaguely visible as elements of the landscape from distances of more than 3 km (Mattioli, 2008, p. 2 fig. 2). The large ‘Princely’ burial mound on the Glauberg and its direct vicinity including the ‘processional avenue’ has above been described as a sacred area. The viewshed from that area generally covers the same visible zones as from the plateau and the slopes – except of the area northwest of the Glauberg to which the view is blocked by the hill. Again, most burial mounds appear to be on the rim of the visible zone. There is one exception: The ‘processional avenue’ is aiming to the southeast, towards the moonrise at the Major Lunar Standstill. The direction of the moonset at the Major Lunar Standstill is roughly southwest, and here the view from the ‘Princely’ mound surrounding is blocked by the small summit of the so-called Enzheimer Kopf, leaving an invisible corridor parallel to the direction of the moonset (fig. 14).

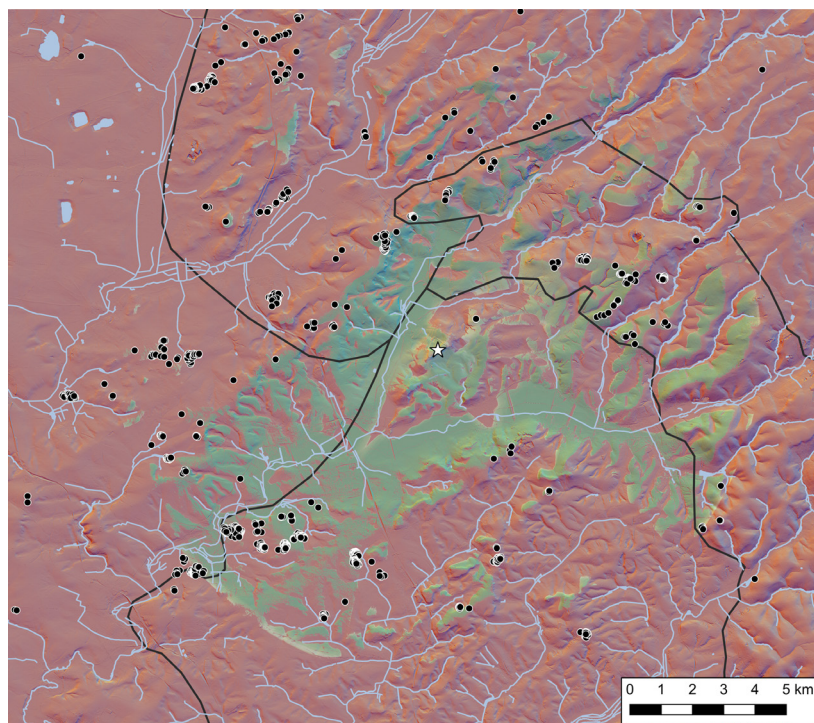


Figure 11. Cumulated 10 km viewsheds of 68 observer points covering the Glauberg plateau (white star) and the settlement areas on the slopes. Green: visible; red: invisible; the black dots represent the known burial mounds, the black line marks the border of different environmental zones (graphic: Axel G. Posluschny, based on the multiple directions hillshading LiDAR data visualisation, courtesy of Hessisches Landesamt für Bodenmanagement und Geoinformationen).

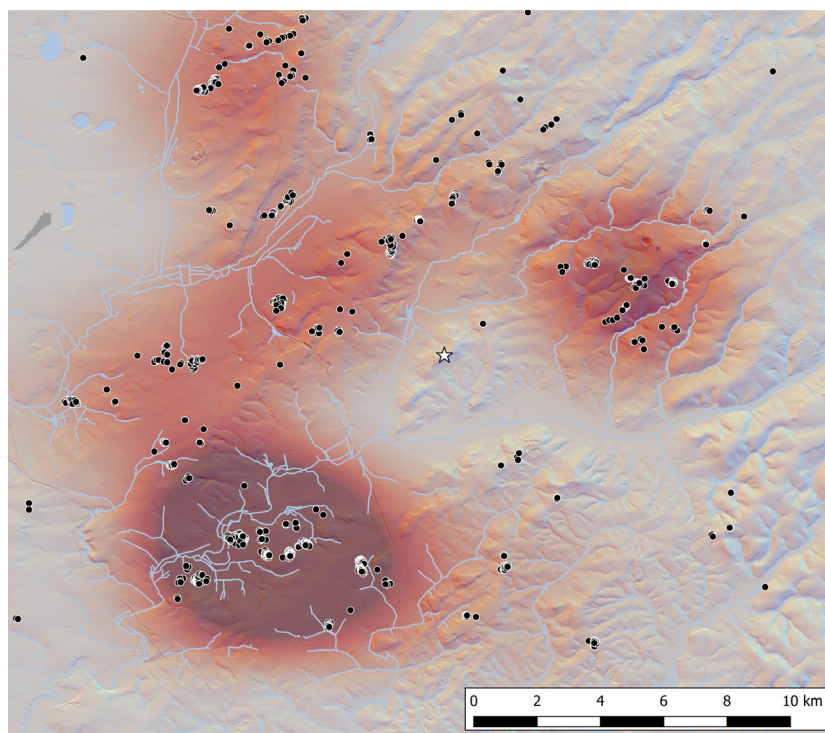


Figure 12. Heatmap visualisation of the burial mound's density around the Glauberg (white star) (graphic: Axel G. Posluschny, based on the multiple directions hillshading LiDAR data visualisation, courtesy of Hessisches Landesamt für Bodenmanagement und Geoinformationen).

The rampart of the large ditch/rampart system around the Glauberg is still preserved under the forest canopy of the Enzheimer Kopf. It ends in the west, (deliberately?) leaving the orientation of the Major Lunar Standstill's moonset unblocked and allowing observation of the moonset close to the summit (fig. 15). Currently, it remains unclear if indeed all these aspects of visibility relate to the proposed calendar building/structure but the possibility is worth mentioning as yet another complex feature of the Glauberg in its surrounding landscape.



Figure 13. Simple local relief visualisation of the LiDAR data showing an area with ploughed burial mounds (white spots in the centre) northwest of the Glauberg. Only the green area is under forest canopy (graphic: Axel G. Posluschny, LiDAR data courtesy of Hessisches Landesamt für Bodenmanagement und Geoinformationen).

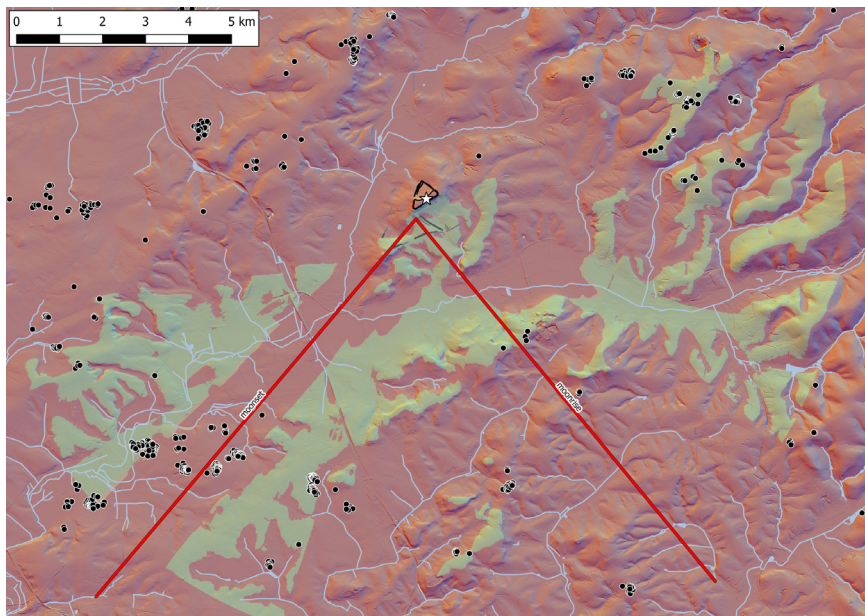


Figure 14. Cumulated 10 km viewsheds of five observer points from the 'sacred' area near the 'Princely' burial mound south of the Glauberg plateau (white star). Green: visible; red: invisible; the black dots represent the known burial mounds; the red lines mark the moonset and moonrise respectively of the Major Lunar Standstill (graphic: Axel G. Posluschny, based on the multiple directions hillshading LiDAR data visualisation, courtesy of Hessisches Landesamt für Bodenmanagement und Geoinformationen).

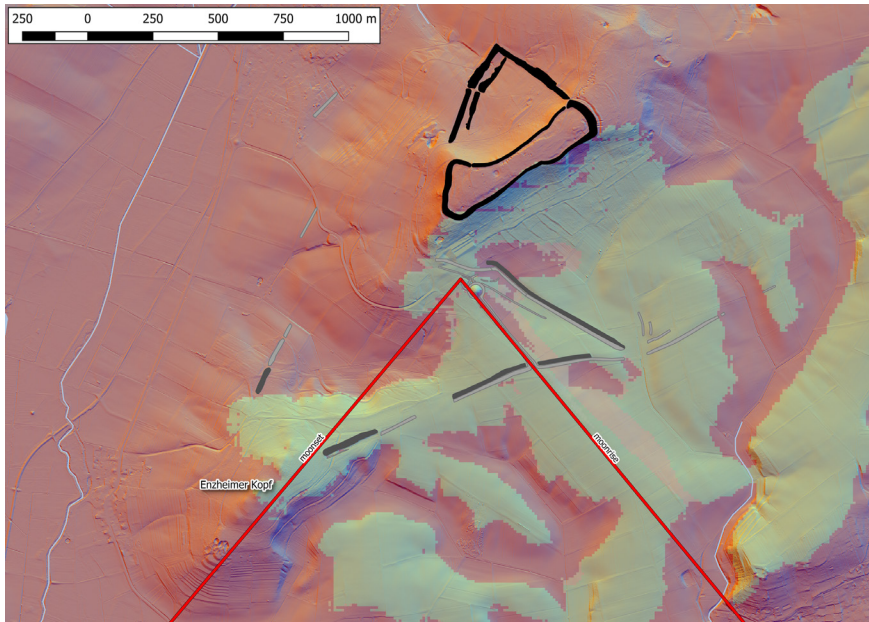


Figure 15. Detail of the viewshed area of five observer points from the ‘sacred’ area near the ‘Princely’ burial mound south of the Glauberg plateau (fig. 14). Green: visible; red: invisible; the pale and dark grey lines represent the ditch and rampart respectively of the large system around the Glauberg (graphic: Axel G. Posluschny, based on the multiple directions hillshading LiDAR data visualisation, courtesy of Hessisches Landesamt für Bodenmanagement und Geoinformationen).

4 Conclusion

Locating ‘the sacred’ is no easy task using archaeological methods, especially when no stone-built heritage has been used that could be interpreted as temples, churches or other places of worship and religious/cultic practices. Moreover, people in the past might have had other perceptions of what is sacred than we have today, ranging from sacred objects over intangible things to places or even areas in the landscape that might or might not have had visible signs or symbols. Nevertheless, according to Moser & Feldman (2014, p. 1) “sacred space does not exist *a priori* but is the outcome of actions, intentions, and recollections – it is the result of past and present interactions among humans, material implements, architecture, **and landscape**” (emphasis added). The inclusion of landscape context, in particular, has the potential to foster other aspects such as astronomical events. Much effort has been undertaken, to make plausible astronomical aspects of Neolithic or Bronze Age structures such as megalithic monuments – henges and burial mounds (e.g. Cochrane, 2013; Prendegast, 2006; Sims, 2016; Higginbottom, Smith, & Tonner, 2015). For later periods, such as the Iron Age and when supposedly ‘historical evidence’ appears to provide an explanation, the research of astronomical relation ceases (exceptions, e.g. Prendegast, 2015 or Mees, 2010).

If we agree that various aspects of human behaviour can be understood as being related to ‘the sacred’, like burials or maybe astronomical observations and events, we might be able to find traces in the landscape that might have had a sacred meaning for people in the past.

The ideas presented in this paper intend to foster the discussion about the archaeological structures at the Glauberg and about their potential to support ‘sacredness’, related of course to the main question of the meaning and the importance of the Glauberg in the Early Celtic period.

The excavations on the Glauberg have brought to light archaeological structures like the burial area and the ‘processional avenue’ where most people would not hesitate to connect them to aspects of religion and cult. On a broader scale the Glauberg might be seen as a place with not only a social meaning or a place for living, or for making one’s living by mainly agricultural means but also as some kind of stage that symbolises religious aspects by acting as a transitional zone between the living and the dead, characterised by the dichotomy between the visible and the invisible.

What becomes very clear when taking this multi-scale approach is the fact that the highly symbolic meaning of the features and the site itself within the surrounding landscape make the Glauberg special in a sacral and in a profane way – which potentially might be one of the reasons for the importance of the Glauberg in the Early Iron Age.

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