

Age (described for the Heuneburg by MÜLLER 2016, 119–120). As such, of course, far-reaching questions are connected with the number of inhabitants at the Heuneburg, for instance aspects of tension rising and struggles for power in such agglomerations (e.g. STEGMAIER 2018) or new mechanisms of decision making at the site. Moreover, much wider questions concerning the social structure of early Iron Age societies are connected with these population figures and we still need to debate if we see a vast step in the social and political structures in the early Iron Age (SCHUMANN 2015) or only an attempt to introduce new structures, which did not lead to long-term social change. After all, most of these sites only existed for a very limited period, with the site discussed here lasting for only two generations in its maximum extent. The Heuneburg takes a most prominent position in this discussion. This was recently pointed out by Oliver Nakoinz, who argued that internal crises connected to the large number of inhabitants and the lack of strategies for reducing social complexity led to tension, civil war, and ultimately the massive decrease of the population of the Heuneburg settlement complex (NAKOINZ 2017). In other words, the Heuneburg was too successful for early Iron Age societies to handle the immense agglomerations at this specific site. Be this as it may, as the scope of this paper is not to evaluate social interactions and developments. The demography of the Heuneburg is nevertheless connected to much wider issues.

All these questions remain fascinating and debatable and provoke interesting research and insights into the early Iron Age, no matter if we are talking about 2000 or 5000 inhabitants. Thus, the Heuneburg loses nothing of its significance for later prehistory in Central Europe. But that does not relieve us from the burden to estimate and work with numbers that are as accurate and realistic as possible. The award for the first settlement with approximately 5000 inhabitants north of the Alps goes to some other, later site, at least at the current state of research. Still, the Heuneburg will keep stimulating further research and the ongoing fieldwork in the region will offer many new answers and questions concerning the developments at the Heuneburg and in the early Iron Age in general. As such the Heuneburg remains one of the most exceptional and important sites of the 1st millennium BCE in Central Europe with a number of inhabitants previously unknown in these regions.

Size matters – A re-evaluation of the Heuneburg demography

By Dirk Krause, Manuel Fernández-Götz, Andreas Gutekunst and Leif Hansen

Introduction: Challenges and Possibilities of Prehistoric Demography

Demographic estimates are among the most difficult aspects of archaeological interpretation. While many scholars remain sceptical of any attempt to estimate past population figures, these calculations represent an important element when it comes to discussing aspects such as the scale of communities, socio-economic parameters including production and consumption, human impact on the environment, or the nature of internal and external conflict. Attempts to systematise the reconstruction of past population figures gained popularity after the rise of processual archaeology (HASSAN 1981), and in recent decades we have witnessed a renewed boost (cf. BOCQUET-APPEL 2008; CHAMBERLAIN 2006; NIKULKA 2016). In addition to the traditional estimation methods based on cemeteries (most notably the analysis of the number of graves by generations) and settlements (houses, overall settlement sizes), we can highlight the increasing application of demographic models using radiocarbon-based simulation (CREMA ET AL. 2017). Although later prehistoric and historical periods generally provide a better database (see BURMEISTER / GEBÜHR 2018 for a recent summary on the Iron Age), demography has become a fashionable research topic even

in the Palaeolithic (e.g. KRETSCHMER 2015). However, due to the distrust normally generated by population calculations, scholars that dare to propose them often tend to understate the figures by taking a lower number of pre-adults than that found in most traditional agrarian communities (GONZÁLEZ-RUIBAL 2006/07, 205).

It must be stated at the outset that, in the absence of complementary written sources, all demographic estimations can only be considered a heuristic exercise that aims to provide a rough indicative value rather than claims definitive numbers. Equally, it needs to be acknowledged that our databases will always be incomplete, that depending on various parameters and assumptions we can often reach different conclusions, and that models need to be (re)adjusted in the light of new discoveries. There are, therefore, numerous factors to be taken into account, but this does not preclude the development of plausible models based on solid archaeological data. To this extent, it is not surprising that the Heuneburg, one of the most intensively investigated sites of late prehistoric Europe (cf. KRAUSSE ET AL. 2016 for a recent overview), provides an ideal scenario for an informed debate on population figures. R. Schumann's discussion article has the undeniable value of stimulating intellectual exchange about the demographic dimensions of this key site of late European prehistory. However, we disagree with his reasoning and conclusion of a maximum of 2000–2500 inhabitants, for reasons that we will expose in the course of this paper.

Before moving into the debate, one preliminary point that we share with Schumann is the conviction that a discussion on the demography of the Heuneburg – and other important Iron Age sites – needs to be focused on the settlement data rather than the burial evidence. The rich funerary record around the Heuneburg is of exceptional value and offers multiple insights into life during the period, from notions of identity to interregional connectivity, but in order to estimate the total population of the agglomeration burial data are clearly insufficient. Similar conclusions were reached by GLESER (2005, 295–296) in his study of the region between the Wetterau and Luxembourg in La Tène C–D and ASPÖCK ET AL. (2007, 121) in their analysis of the Dürrenberg evidence.

As KIMMIG (1983a, 65–66) was already correct in pointing out, calculations of the labour effort required to build a settlement are of no help when it comes to calculating its population, as the task could also have involved some of the population from the nearer or even wider environment. As far as the mudbrick wall at the Heuneburg is concerned, attention is drawn to the results of the fundamental study undertaken by REMISE (2019), which has recently been published and demonstrates that the older calculations made by BURKHARDT (2010, 34) are significantly too low and need to be revised. Remise's much more complex and detailed study is based on an architectural-energetic approach and a series of experiments, estimating that two work seasons were needed, with a workforce at peak moments of over 400 persons who were dedicated exclusively to the building of the fortification.

Archaeological Demography at the Heuneburg

As one of the best investigated archaeological sites of the European Iron Age, the Heuneburg has figured prominently in discussions about demography. However, we need to take into account the growing archaeological knowledge about the site, the picture of which has changed dramatically in the last few decades (cf. the recent summaries by FERNÁNDEZ-GÖTZ / KRAUSSE 2013; KRAUSSE ET AL. 2016). For a long time, the research focus was concentrated on the 3 hectares of the hilltop plateau (*Burgberg*, see GERSBACH 1995; KIMMIG 1983a). H. HÄRKE (1982, 193) suggested between 1500 and 2000 inhabitants inside the mudbrick wall fortification in period IVb (Schumann attributes Härke's 1000 to 2000 inhabitants to the plateau and the known part of the outer settlement,

which is not fully correct). Although it was recognised that an outer settlement existed, very little was known about it and it was thought to encompass only a few hectares. This picture has changed fundamentally since the 1990s, mainly due to the work carried out by Siegfried Kurz in the surroundings of the hilltop that led to the discovery of an outer settlement some 100 hectares in size (*Außensiedlung*, see KURZ 2000; KURZ 2007; KURZ 2010, and discussion below). In addition, we need to consider the area of the so-called lower town (*Vorburg*), located immediately at the foot of the hilltop, which was separated from the outer settlement by an extensive system of banks and ditches and accessed through a monumental gatehouse (FERNÁNDEZ-GÖTZ 2019; G. KURZ 2008). While its extent cannot be fully determined as the limits towards the north are still partly unclear, a minimum of 1.5 hectares can reasonably be assumed.

But it is important to note that this large settlement complex of hilltop, lower town, and outer settlement covering over 100 hectares only existed during a short period of the Late Hallstatt Heuneburg, most notably periods IVb–IVa of the site stratigraphy (ca. 600–540/530 BC). In the following, our discussion of the demographic estimates of the Heuneburg will focus on this time span, as it is the one for which the highest total population can be postulated, and on which Schumann's analysis is centred.

Importantly, Kurz repeatedly adjusted his population figures over the years in the light of the rapidly growing archaeological information produced, to a large extent, by his own discoveries in the outer settlement. Thus, he did not start with a preconceived idea of a settlement of several thousand inhabitants but rather corrected and partly contradicted his earlier views in what can be seen as a good example of intellectual honesty and willingness to adjust models to new data. In his work, we can see a progression from initially around 1000 inhabitants (KURZ 2000, 165), to 1500–2000 (KURZ 2006, 178), and finally c. 5000 (KURZ 2010, 249). This latter number was based on the assumption that c. 500 households could have lived in the outer settlement during Hallstatt D1, which with an estimated average of seven individuals per household would result in about 3500 inhabitants. To them Kurz adds another 1500 inhabitants that could have lived during the same period on the hilltop plateau and in the lower town, a reasonable number taking into account the high building density on the hilltop during the mudbrick wall phase. Schumann's claim that "Kurz supposes an equally dense population in the outer settlement and on the plateau" is not correct, as 3500 inhabitants were estimated for the 100 hectares of the outer settlement compared to only 1500 for an area that, despite the uncertainties about the extent of the lower settlement, would probably not have exceeded 5 hectares. Kurz was indeed very aware that the settlement density was not the same on the hilltop plateau and in the outer settlement, and he took this into account in his demographic estimations. Be that as it may, we ourselves considered the c. 5000 population figure given by the excavator of the outer settlement to be plausible (FERNÁNDEZ-GÖTZ / KRAUSSE 2013; KRAUSSE ET AL. 2016). Of course, we always understood this to be only a rough estimation, rather than a definitive number, and based on the use of different parameters (number of household units, average number of inhabitants per household, etc.) we could reach slightly lower or even higher population numbers, whereby most recently Krausse (KRAUSSE / EBINGER-RIST 2018, 130) assumed that the minimum (!) population during the mudbrick phase was 3000–4000. However, even today any assessment of the structures and of the settlement and building density in the outer settlement is hampered by the fact that Siegfried Kurz's premature death in 2014 meant that he was no longer able to publish the results of his excavations. It was only with the on-going study of the excavation data by Andreas Gutekunst in the course of his PhD thesis that it is now becoming clear that occupation in the outer settlement was much more varied, dense and complex than was previously assumed. In what follows we will present a preliminary summary of the new picture emerging from the re-evaluation of the primary data.

The Heuneburg Outer Settlement – A Preliminary Reassessment

The most important factor in any assessment of the population of the Heuneburg is the outer settlement, as in our opinion it has the greatest demographic volume of any part of the settlement complex. Two factors are decisive: the full extent of the settlement and the population density. It was above all the second factor that led R. Schumann to take a critical look at Kurz's population estimates. For his figures KURZ (2010, 49) assumed a relatively high density of households within the outer settlement, suggesting that there were ten or eleven households per hectare, with an average of seven individuals per household. Thus, for a settlement with an area of 100 hectares, of which he proposed 50–75 hectares was effectively built over², he arrived at a figure of 500 households with a total of 3500 inhabitants. Schumann expresses doubt about the excavator's calculations and proposes instead that the (published) data on the distribution of structures indicated that they were less densely arranged and that there were generous unbuilt areas between them. He also points out that the buildings that had been excavated had not necessarily all stood at the same time, implying that at other times these areas could have been open and vacant. Particularly important for the results of his estimation is the assumption that there will have been only two or three farmsteads within each of the fenced enclosures, a stark contrast to the figure of ten households per unit that KURZ (2010, 49) proposed.

However, on closer inspection it is clear that the density of structures as reflected in the excavation plans is above all a result of features having been destroyed by erosion and agriculture. Obviously, not all of the buildings discovered in the outer settlement were contemporary. The identifiable structures are those that had particularly deep foundations which – in contrast to others which undoubtedly had shallower substructures – have survived destruction. This is the only possible explanation for the fact that, for example, within the large enclosure in the centre of the excavated area known as “Großer Brand” (Ertingen-Binzwangen) (S. KURZ 2008, 165–167) the substructures of only a few buildings have survived, whereas at the same time a reassessment of the evidence indicates that there were probably more than ten building phases. Unless we want to assume that during a period covering several phases a fence was built but no buildings were erected within it, then we must conclude that many internal buildings have disappeared without a trace. The loss of archaeological substance affects almost all areas of the settlement on the west side the Heuneburg; it is only in the part covered by the large tumuli of the Gießübel-Tahlau necropolis – in particular beneath tumulus 4 – that substantial traces of the occupation layers have survived. Here the building density is particularly high, with fences and buildings in close proximity to each other (KURZ 2000, Annex 5). But whether the section beneath tumulus 4 is typical, we cannot say with certainty. On the other hand, it would be a remarkable coincidence if it was the most densely built area that was the best preserved of all. Furthermore, seven (!) sill-beam structures were evidenced here in just a small area, but there is no chance whatsoever of traces of structures of this kind having survived in the unprotected sections of the outer settlement. It is true that sill-beam structures are characteristic of the earliest buildings on the plateau in period IVc, but in the outer settlement, beneath tumulus 4, they are to be found as late as the mudbrick wall phase (KURZ 2000, Annex 6). Theoretically it is possible that the supposedly open areas within the fenced enclosures in the outer settlement were densely packed with block-built structures or timber-framed buildings with sill-beams but without traces of them being preserved. Without wishing to claim

² The range stems from Kurz's assumption that the units were each 1–1.5 hectares in size – and presumed there were 50 units in the settled area.

that this was necessarily the case, it is clear that any estimate of the population density must take factors of the preservation of archaeological features into account. Schumann neglects to analyse the source material sufficiently critically and so arrives at incorrect results.

Independently of such considerations, as the analysis of the excavations in the outer settlement progresses it is becoming clear that the population model proposed by Kurz is now problematic – not so much due to the total numbers or the density that he proposed but rather because of the way he suggested that the settlement was arranged (*Fig. 4*). In particular, his standard measurement of 1–1.5 hectares for the size of the individual units (KURZ 2010, 247) presents problems. He based the size on the situation in the multi-phase enclosure “Großer Brand” which, as it turns out, is an exception within the Heuneburg complex, not just in terms of size but in various ways. Although the relevant plots could at times be larger than Kurz assumed, more importantly many, if not the majority of the units in the outer settlement were apparently much smaller. For example, one of the enclosures in the southern part of the Greutäcker-area could not have been larger than some 1800 m² (KURZ 2010, 247–248 *fig. 8*). This is particularly apparent from the situation in the area of the tumuli in Giesübel-Talhau. Beneath tumulus 1 a plot can be identified with an area of less than 1000 m² (KURZ 2000, 40; 65; 2005, 7), that is only one tenth of the size of the enclosure in “Großer Brand” (*Fig. 5*). This is almost exactly the same amount of space that Kurz proposed for a single household on the hilltop plateau on the basis of the buildings there (KURZ 2010, 249).

A similar arrangement can also be observed in several phases of the settlement beneath tumulus 4 (KURZ 2000, Annex 3), while in the trench Greutäcker B (KURZ 2006, 65) even smaller plots can perhaps be identified. KURZ (2005, 7) was certainly aware of these differences, but they did not play any role in his model. Similarly, the only enclosure in the area of the so-called “*Südsiedlung*” that was supposedly of the same size (KURZ 2010, 248) can be shown to have had an area of 4200 m². This means that the big estate in “Großer Brand” cannot be taken as a standard unit that can be projected onto the entire settled area of the outer settlement. The settlement pattern was clearly much more varied than the one employed in Kurz’s model. Besides individual large plots such as the one in “Großer Brand”, and perhaps also in the *Südsiedlung*, there must have been a multitude of smaller and very small units which, on the basis of their size, can with some justification be compared with the households on the hilltop plateau. They can certainly be observed beneath the tumuli of Giesübel-Talhau, in the *Südsiedlung* and in trench Greutäcker B excavated in 2006.

Our present state of knowledge does not allow us to estimate to what extent the settlement consisted of larger and smaller plots. However, if the full potential of the area on the ridge to the west of the Heuneburg that was settled was to be realised, buildings would have to be erected on smaller plots as the terrain undulates heavily in places, particularly at the edges where gullies cut into it and on the upper slopes. If we assume that less than half, perhaps only 40%, of the 50–75 hectares of the outer settlement that were in fact built on consisted of smaller enclosures with an average size of 1000 m² – which by no means seems exaggerated if we take into consideration the fact that they are to be found not only in areas with marginal terrain –, then the minimum number of households is 200 (at one household per unit). If there were 7–10 inhabitants per household³, then there will have been between 1400 and 2000 inhabitants on just the 20 hectares of the area built on that was divided into small plots. We can perhaps assume that there were two households on

³ Kurz suggested seven persons per household, while Schumann increases the figure to ten. Cf. KURZ 2010, 249.

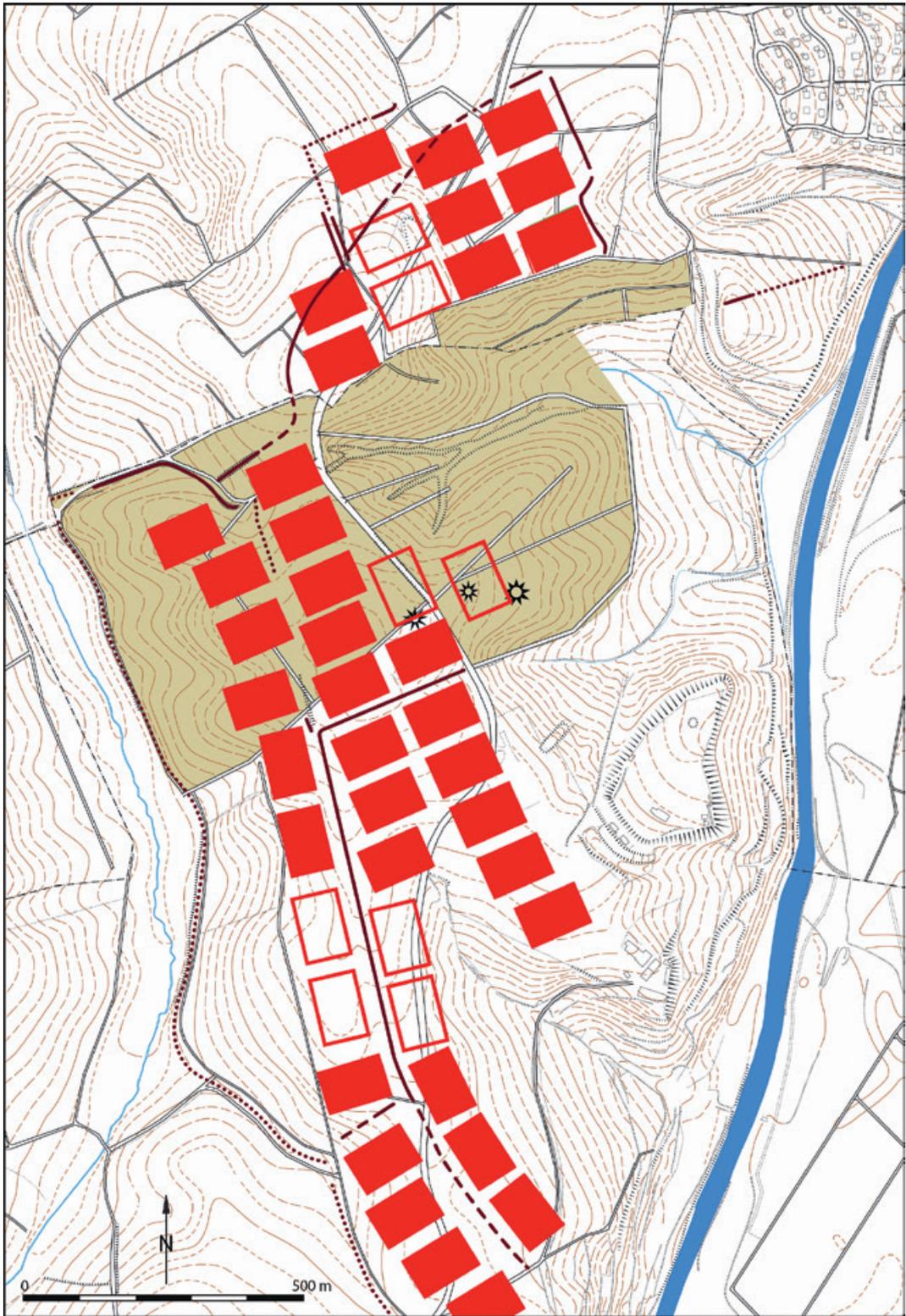


Fig. 4. Internal structure of the outer settlement according to S. Kurz.

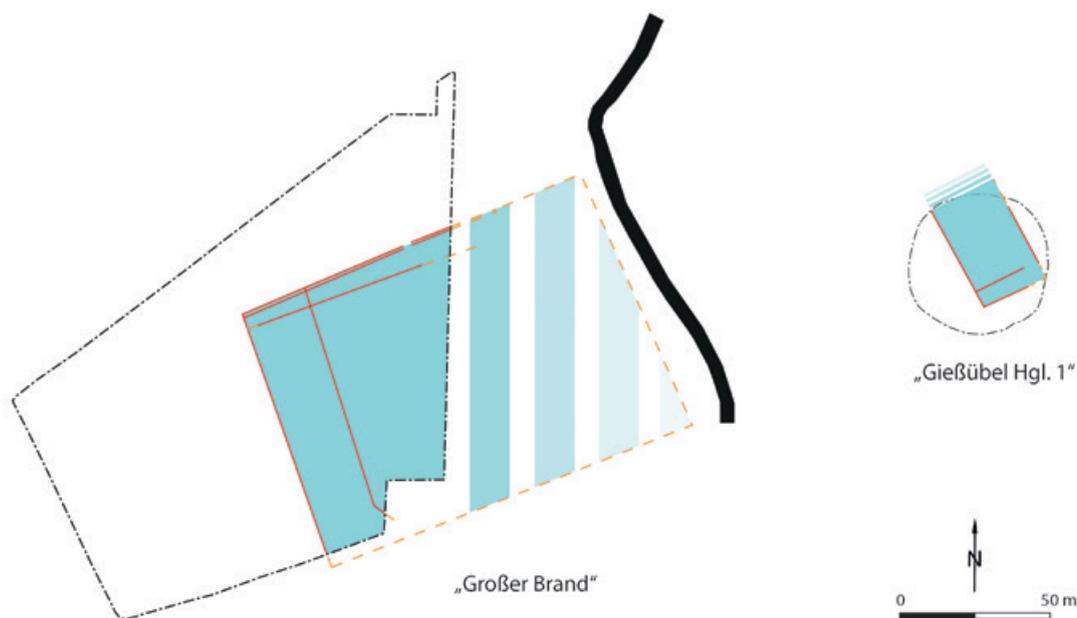


Fig. 5. Comparison between the fenced plots in “Großer Brand” and Gießübel tumulus 1.

the larger 1800 m² plots, which would make the total number even higher. To this must be added the areas with enclosures of some 1 hectare. If we follow Schumann in assuming that there was only one household per unit – an assumption that is certainly incorrect given the above mentioned loss of features through erosion and agriculture – then they would add a further 210–600 persons⁴. This would mean that if 50 hectares of the outer settlement were built over, then some 1600–2600 persons lived there in 230–260 households. If 75 hectares were built over, the figure would be 2400–3900 persons in 345–390 households. The generally accepted figure for the size of the outer settlement is 100 hectares, which would mean a population density of between 16 and 39 persons per hectare. This figure fits well within the notion of low-density urbanism proposed by R. FLETCHER (2012; for an application to the Iron Age see MOORE 2017). This does not even take into account the possibility that there may have been three households per large unit, an option that Schumann accepted conditionally and which would produce a minimum figure of 2030 to 3045 inhabitants in the outer settlement.

In any case, for a number of reasons these demographic estimates are quite probably only minimum figures. For example, as was shown above, on the basis of the excavation results we cannot fully discard the figure of ten households for each of the large plots suggested by Kurz. Even more important is an observation that has not been included in any of the estimates produced so far: the re-evaluation of the excavation is increasingly revealing that the outer settlement cannot just have consisted of open areas and fenced off enclosures of different sizes. There are an increasing number of indications that there was also intensive building activity between the enclosures, in

⁴ According to Kurz the population in these areas could have been as high as 2100 inhabitants.

some cases without own fenced perimeter. Since we may assume on the basis of the long stratigraphic sequences of the fences in “Großer Brand” and beneath tumulus 4 in Gießübel-Talhau, for example, that these enclosures were erected at the very beginning of the outer settlement and must have been there the whole time, the building activities between the enclosures can only be interpreted as the result of a subsequent increase in settlement density. This could mean that there was a continual inflow of settlers who established themselves in the areas that had remained open. Another phenomenon also clearly shows that the space available for settlement was at times heavily limited. At a particular point in the development of the outer settlement, buildings began to be erected in areas with a topography that was extremely unsuitable for habitation. Thus, on the flanks of the “Talhou” woods even the narrowest ledges were densely built on (KURZ 2007, 98–100 cat. no. 33 D4). On the one hand, the use of such secondary sites that were unsuited to construction demonstrates that at some point the primary building area must have been occupied. On the other hand, intense external settlement pressure becomes visible, which must have increasingly restricted the land available for building. There is also evidence that some of the fenced enclosures were apparently modified subsequently, for example by the construction of extra fences in order to divide them up, or the addition of annexes, which may be an indication that additional households were included into existing units.

Against this background we can no longer assume that the outer settlement was only “sparsely” built up. Even the lowest of the estimates presented above of just 16 persons per hectare hardly fits the phenomenon. Furthermore, the enormous contrast with the hilltop plateau, where even Schumann proposes that appreciably more than 300 persons per hectare lived, would be difficult to explain. At any rate, a population estimate must also take into account the areas of settlement at the periphery of the outer settlement as well as the fact that with time the population density probably increased. As KURZ (2005, 23) repeatedly emphasised, during the course of his excavations the actual limits of the outer settlement could never be determined with any certainty. He based his calculations on a settled area of 100 hectares, but Hallstatt period finds are spread well beyond the area in all directions. Some find spots with the remains of buildings in the immediate vicinity – which KURZ (2007, 46–54) himself thought were to be regarded as independent settlements – are so close to features from the outer settlement that in the meantime doubts as to their autonomy seem justified. This is particularly apparent for a find spot with extensive traces of settlement in the “Hohmichel” woods. It lies just some 300 m from the structures of the outer settlement in Gießübel and is only separated from the latter by the uninhabitable wet depression of the Soppenbach (KURZ 2007, 24–28). It is in fact the next viable area to the west. Given that the area within the outer settlement available for building was becoming ever increasingly limited, this is precisely where the occupied area could have been extended. At present, everything indicates that this and other find spots with Hallstatt finds immediately to the south, west, and north of the known area of the outer settlement should perhaps no longer be regarded as independent settlements but as the result of an extensive expansion of the settled area into topographically suitable areas on the periphery of the outer settlement. Exactly where the more densely built up area of the outer settlement ended, and where settlement took the form of more sparsely scattered individual units in the hinterland, cannot at present be determined. However, these sections are without doubt an integral part of the settlement complex at the Heuneburg and must also be included in any demographic estimate. At this point it is finally quite clear that estimates of some 3500 inhabitants for the settlement around the Heuneburg are by no means exaggerated. If we take into account the possible extent of the settlement complex, then the numbers in fact seem conservative, and thus should be seen as a minimum figure.

The Heuneburg hilltop and lower town

When considering the population of the hilltop plateau and the *Vorburg* (lower town), it is important to take into account the fact that only one third of the former and approximately only one fifth of the latter have been excavated. On the hilltop, during the periods IVb and IVa, the buildings in the peripheral sections can be shown to have reached right up to the mudbrick wall, and in some cases to even have been built up against the inside of it. According to GERSBACH (1995, 130; 163), the “white areas” in the more central sections of the interior are the result of taphonomic processes and are not an indication that the entire area inside the wall was not completely built over during period IV. The excavator argued convincingly that the majority of the buildings were habitations, whereby for some of them a second floor for living or storage purposes may be assumed. The towers were also inhabited (GERSBACH 1995, 66–73). Assuming that the pattern of buildings in the well-preserved and -documented section in the south-east of the hilltop can be applied to the entire internal area, we obtain a total of at least 100 to 150 residential buildings or combined residential-workshop buildings with a base / floor area of between 20 and over 100 m² (GERSBACH 1995, 139–141). If two floors of the buildings, which were up to 8 m high, were used, the inhabitable area would be correspondingly higher. If we assume a hypothetical figure of seven to ten inhabitants for each residential building, then between 700 and 1500 persons could have lived on the hilltop plateau in periods IVb–a.

Any calculation for the population of the c. 1.5 hectares of the lower town is more difficult. As far as the dating and the functional interpretation of the buildings of period IVb–a are concerned, the results of the analysis being carried out by Leonie Rossi as part of her ongoing PhD dissertation at the University of Marburg will have to be awaited.

When everything is taken into consideration, then we have to assume that in the middle of the 6th century BC at least 4000 persons lived at the Heuneburg, including the lower town and the outer settlement. Lower estimates are incompatible with the archaeological data. In our opinion, the most plausible calculation would be to assume a population of at least 5000, with at least 3500 inhabitants in the outer settlement, c. 1000 on the hilltop, and c. 500 in the lower town.

Conclusion

We consider Schumann’s population figures to be far too low, particularly in the light of the archaeological evidence from the outer settlement. While all demographic calculations are only rough estimates and incorporate elements of subjectivity and uncertainty, some are more plausible than others. To this extent, his discussion article does not take into account and / or misinterprets important information, which leads to a rather misleading impression of the internal structure of the settlement complex and its demographic dimensions. It should, however, be taken into account that Schumann only had insight into the fieldwork evidence published by S. Kurz in brief overview articles (e.g. KURZ 2006; 2010), while our current article incorporates a much more extensive re-evaluation of primary data that has been undertaken over the last few years within the framework of A. Gutekunst’s PhD thesis.

Claims for lower population figures might appeal to part of the readership, particularly those who remain sceptical of the existence of an Early Iron Age phenomenon of urbanisation (or proto-urbanisation) north of the Alps. But they do not necessarily constitute a more “objective” or “critical” interpretation of the evidence. In fact, taking a broader look, research over the last two decades has demonstrated, not only at the Heuneburg but also at many other contemporary sites

in Germany, France, and the Czech Republic, that the dimensions (in terms of settlement size, demography, and socio-technological complexity) of Early Iron Age temperate European societies have traditionally been under- rather than overestimated. To name only a few examples, just thirty years ago nobody would have expected that the extent of the Heuneburg could be at least 100 hectares; that the plateau of the Glauberg (Wetteraukreis, DE) was surrounded by an extensive system of banks and ditches that incorporated rich barrow burials and a large “processional avenue”; that Mont Lassois (Dép. Côte-d’Or, FR) housed several monumental apsidal buildings and extended over a large enclosed area at the foot of the hilltop plateau; or that Bourges (Dép. Cher, FR) covered an enormous area of probably more than 200 hectares (some recent overviews in FERNÁNDEZ-GÖTZ 2018, 119–126; FERNÁNDEZ-GÖTZ / RALSTON 2017; KRAUSSE 2008; 2010; KRAUSSE ET AL. 2016). To this we could add research on the wider surroundings of the agglomerations, which in the case of the Heuneburg is revealing a complex network of further fortified and unfortified sites within a radius of around 20 kilometres from the central settlement (HANSEN ET AL. 2017). All in all, the evidence of the last few decades has completely changed our previous picture of the period, leading some scholars even to suggest the existence of some early, although fragile embryonic state formations around some of the above mentioned agglomerations (RALSTON 2010).

Thus, Schumann’s approach of casting doubt on the figures that had by no means been light-heartedly proposed by S. Kurz, suggesting they should be reduced, and thus the demographic dimensions of the Heuneburg as well, does not match the trend of current research. Rather he seems to follow a specifically German tradition that tends to underestimate the size, level of development, and potential of Iron Age societies north of the Alps. In this context attention is drawn to the controversial discussion of the socio-historical significance of the so-called “princely graves” (*Fürstengräber*; cf. EGGERT 1999; KRAUSSE 1999). Here the “primitivistic” concept of those colleagues who attempted to minimise the social dimensions and complexities behind the burials were unsuccessful in the face of the unequivocal archaeological evidence (cf. most recently SCHIER 2018). Such primitivistic approaches have in the past severely hampered archaeological research into Hallstatt societies. For decades it was incorrectly claimed that the fortifications of the hilltop and the lower town at the Heuneburg, or of the Alte Burg near Langenenslingen, were medieval since it was apparently inconceivable that Hallstatt societies could have built structures of such quality and dimensions (KRAUSSE 2013). Schumann’s approach would appear to be rooted in this (unfounded) scepticism.

Would 5000 inhabitants be too many for a 6th century BC settlement north of the Alps? According to calculations by FISCHER ET AL. (2010), the territory within 6 km around the Heuneburg could have fed a population of c. 9000 people, so with around 5000 or even slightly more inhabitants the carrying capacity of the surroundings would not have been reached. To this we should add the fact that some of the food was imported from much further away (STEPHAN 2016). In this context, on a larger scale attention must be drawn to the enormous density of settlements and burials of the Late Hallstatt and Early La Tène periods from the long-settled landscapes up to the upper regions of the highlands (BALZER 2010; KRAUSSE 2006, 311–314). The palynological data also indicates that between the 8th and the 5th centuries BC there was a dramatic increase in the use of land and massive demographic growth (FISCHER ET AL. 2010, 209–213). In the 5th and 4th centuries BC in some areas north of the Alps, deforestation even surpassed the level recorded for the Roman period (DÖRFLER ET AL. 2000; KRAUSSE 2006, 307–309). We must conclude that even relatively inhospitable highland zones were densely settled during the Late Hallstatt and Early La Tène periods. This is particularly the case for the long-settled, fertile landscapes (BALZER 2010). For this reason, centres of power such as the Heuneburg, Hohenasperg, Ipf, or Glauberg, quite independently of their individual specific structures and the number of their “permanent inhabitants”, would have been important reference and identification points, not just for the population

of the surrounding area but for entire macro-regions. It is probable that the so-called “princely seats” (*Fürstensitze*) served as economic, fortificatory, or ritual centres for tens of thousands of people rather than for just thousands. The concentration of numerous contemporary monumental hilltop settlements and fortifications, as well as cult places in the closer and further environment of the Heuneburg (HANSEN ET AL. 2017), for example the Alte Burg, Große Heuneburg, Althayingen, or Bussen, suggest that we can never grasp the full demographic dimensions of Late Hallstatt societies if we concentrate only on the settlement evidence from the Heuneburg itself.

That the demographic estimates proposed by us are perfectly reasonable within the wider historical context is exemplified by a brief comparative look to Etruria: population calculations there show centres with, in general, much higher population figures, ranging from over 30 000 inhabitants for Veii to around 5000 for Chiusi (STEINGRÄBER 2008, 14). Thus, the Heuneburg population would only be situated within the lower range of roughly contemporary Etruscan cities. If we go beyond the artificial and unhelpful division between a “civilised” south and a “barbarian” north, a demographic estimate of around or slightly over 5000 inhabitants for the Heuneburg seems then perfectly reasonable. While we do not have comparable numbers for other contemporary agglomerations north of the Alps, the megasite of Bourges could have easily exceeded this number in the 5th century BC. Be that as it may, we hope to have demonstrated that a demographic estimate of c. 5000 inhabitants for the Heuneburg is not an exaggeration but rather a conservative calculation. Finally, general attention is drawn to the written historical sources, which leave no doubt that from c. 400 BC there were massive migrations of central and western European societies to the south and the south-east. The conquests made by early ‘Celtic’ groups in Italy and the Balkans, or the almost explosive proliferation of archaeological elements of Early La Tène culture in the Carpathian Basin in the 4th century BC, also warn us against underestimating the demographic dimensions of Late Hallstatt and Early La Tène societies in Central Europe. It could also be useful to make a comparison with the situation in the Late La Tène period, which is better documented in the written sources. It may be that Caesar exaggerated the figures for the population or the size of the forces of individual Gallic *civitates*, but even if they are reduced to half, or even a third, they provide demographic units of tens or even hundreds of thousands. In our opinion, the archaeological and palynological data indicate that south-west Germany was more densely populated in the 6th and 5th centuries BC than in 2nd and 1st centuries BC.

To close, another word about the Heuneburg: as of 2020 the current investigations being carried out as part of the long-term project of the German Research Foundation (DFG) at the Heuneburg (HANSEN ET AL. 2017) will concentrate on a number of unusually well preserved areas of the outer settlement that are expected to produce a reliable and resilient material basis. It is our hypothesis that the results of this future research could well indicate higher rather than lower numbers for the demographic dimensions of the Heuneburg!