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Creating Communities  
New Advances in  
Central European Neolithic Research



# Creating Communities

New Advances in  
Central European Neolithic Research

*Edited by*  
Daniela Hofmann and Penny Bickle



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*Cover image: an LBK longhouse at Wang, southern Bavaria, during excavation in September 2008.  
Photo: Alasdair Whittle*

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# Contributors

Luc Amkreutz  
National Museum of Antiquities (Rijksmuseum van  
Oudheden)  
Papengracht 30, Postbus 11114  
NL – 2301 EC Leiden

Rose-Marie Arbogast  
Institut für Prähistorische und  
Naturwissenschaftliche Archäologie (IPNA)  
University of Basel  
Spalenring 145  
CH – 4055 Basel

Corrie Bakels  
Faculty of Archaeology  
University of Leiden  
Reuvensplaats 3–4  
NL – 2311 BE Leiden

Lisandre Bedault  
Université de Paris 1 Panthéon-Sorbonne  
CNRS UMR 7041, ArScAn, Protohistoire Européenne  
Maison de l'Archéologie et de l'Ethnologie  
21, allée de l'Université  
FR – 92023 Nanterre Cedex

Penny Bickle  
School of History and Archaeology  
Cardiff University  
Humanities Building, Colum Drive  
UK – Cardiff CF10 3EU

Erich Claßen  
Bayerisches Landesamt für Denkmalpflege  
Dienststelle Ingolstadt  
Unterer Graben 37  
DE – 85049 Ingolstadt

Corina Knipper  
Eberhard-Karls-Universität Tübingen  
Institut für Ur- und Frühgeschichte und Archäologie  
des Mittelalters  
Naturwissenschaftliche Archäologie  
Rümelinstr. 23  
DE – 72070 Tübingen

Olga Larina  
Institutul Patrimoniului Cultural  
Str. Banulescu Bodoni 35  
MD-2012 Chisinau

Marc Lodewijckx  
Department of Archaeology and Art History  
University of Leuven  
Blijde – Inkomsstraat 21, bus 3313  
B – 3000 Leuven

Fabian Haack  
Generaldirektion Kulturelles Erbe Rheinland-Pfalz  
Direktion Archäologie – Speyer  
Kleine Pfaffengasse 10  
DE – 67346 Speyer

Miriam Haidle  
Intitut für Ur- und Frühgeschichte und Archäologie  
des Mittelalters  
Abt. Ältere Urgeschichte – Quartärökologie  
Schloss, Burgsteige 11  
DE – 72072 Tübingen

Daniela Hofmann  
School of History and Archaeology  
Cardiff University  
Humanities Building, Colum Drive  
UK – Cardiff CF10 3EU

Christian Jeunesse  
MISHA  
Université Marc Bloch – Strasbourg II  
5, allée du Général Rouvillois  
FR – 67083 Strasbourg Cedex

Jörg Orschiedt  
Archäologisches Institut  
Universität Hamburg  
Edmund-Siemers-Allee 1, Flügel West  
DE – 20146 Hamburg

Joachim Pechtl  
Rotkehlchenweg 14c  
DE – 82538 Geretsried

Joanna Pyzel  
Institute of Archaeology  
Gdańsk University  
al. Bielańska 5  
PL – 80-851 Gdańsk

Britta Ramminger  
Archäologisches Institut  
Universität Hamburg  
Edmund-Siemers-Allee 1, Flügel West  
DE – 20146 Hamburg

Anna Rauba-Bukowska  
AGH University of Sciences and Technology  
PL – 30-059 Krakow  
al. Mickiewicza 30

Oliver Rück  
Prähistorische Archäologie  
Institut für Kunstgeschichte und Archäologien  
Europas  
Martin-Luther-Universität Halle-Wittenberg  
Brandenburgweg 23c  
DE – 06120 Halle (Saale)

Dirk Schimmelpfennig  
Institut für Ur- und Frühgeschichte  
Universität zu Köln  
DE – 50923 Köln

Bart Vanmontfort  
Eenheid Prehistorische Archeologie  
Geo-instituut  
Celestijnenlaan 200e – bus 2409  
BE – 3001 Leuven

Samuel van Willigen  
Swiss National Museum  
Department of Archaeology  
Museumstraße 2  
CH – 8023 Zürich

Leo Verhart  
Limburgs Museum  
Keulsepoort 5  
NL – 75911BX Vento

Alasdair Whittle  
School of History and Archaeology  
Cardiff University  
Humanities Building, Colum Drive  
UK – Cardiff CF10 3EU

Andrea Zeeb-Lanz  
Generaldirektion Kulturelles Erbe Rheinland-Pfalz  
Direktion Archäologie – Speyer  
Kleine Pfaffengasse 10  
DE – 67346 Speyer

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# The LBK settlement with pit enclosure at Herxheim near Landau (Palatinate). First results

*Andrea Zeeb-Lanz, Rose-Marie Arbogast, Fabian Haack, Miriam N. Haidle, Christian Jeunesse, Jörg Orschiedt, Dirk Schimmelpfennig and Samuel van Willigen*

## History of research at Herxheim

Between 1996 and 1999, excavations were conducted by the State Office for Archaeological Monuments at Speyer in the future trading estate 'West', on the edge of Herxheim (Südliche Weinstraße district, Palatinate) (Figure 1).<sup>1</sup> The focus of these investigations was a settlement area with surrounding double ditch belonging to the early Neolithic Linear Pottery culture (LBK) (Häußer 2001). In the course of excavation work, approximately one third of the settlement, situated within an apparently elliptical enclosure, was uncovered on the gentle southern slope of the newly emerging industrial estate. Only in the eastern half of

the area were archaeological features less numerous. In this part of the site, intense intervals of erosion and the re-parcelling of agricultural land had led to the loss of the in-situ loess, which had become displaced and slid down the slope in a southeasterly direction. In contrast, in the northwestern part of the excavation, the removal of the topsoil revealed a dense concentration of archaeological features (Figure 2), among which the remains of several loam pits (*Längsgruben*) pointed to the presence of early Neolithic longhouses. Fortunately, at this point the site director Annemarie Häußer received additional support from a site technician kindly provided by the State Office for Archaeological

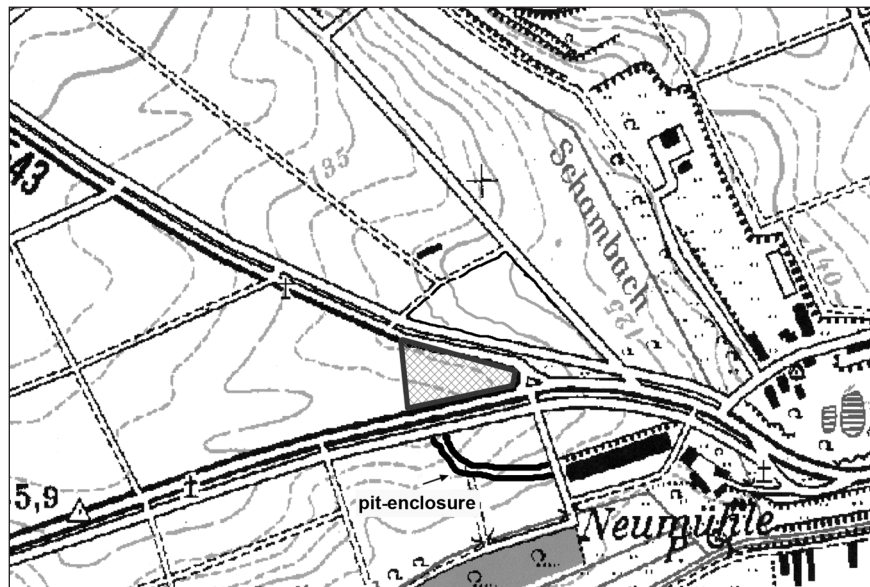


Figure 1. Location of the LBK pit enclosure and settlement in the future industrial estate 'West' (grey hatched area).

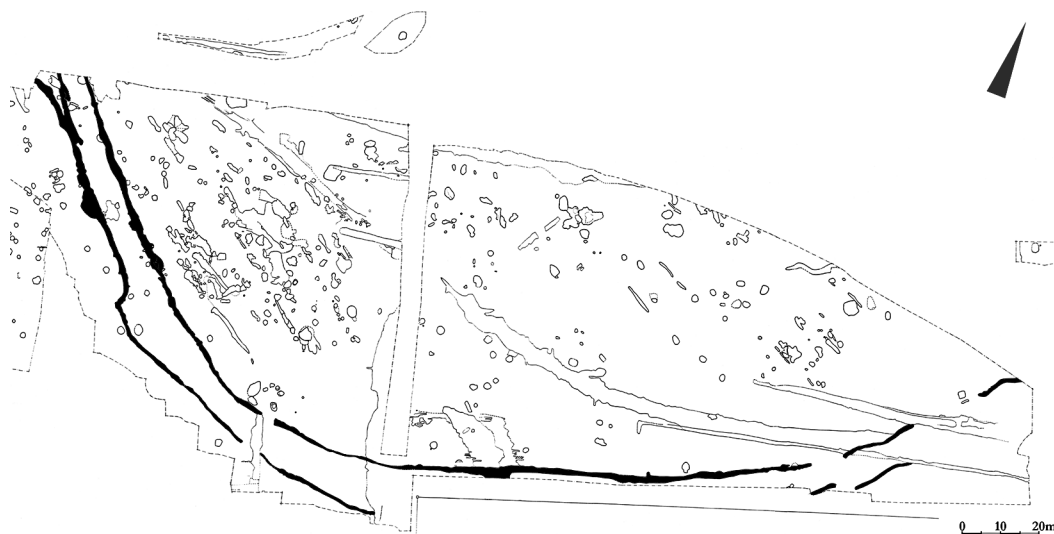


Figure 2. General plan of the excavations 1996–1999.



Figure 3. A concentration of several calottes in the inner pit enclosure ring.

Monuments. This made possible not only a particularly meticulous documentation of the excavation, but also permitted the realisation of numerous extra plana and the digging of additional sections through segments of the enclosure ditch, both of which would not otherwise have been possible given the short time period and financial limitations so often characteristic of the emergency excavation work undertaken by the State Office for Archaeological Monuments.

It soon became evident from the excavation of the parallel enclosure ditches that this feature was exceptional and of a hitherto unknown type for the LBK. Between the upper planum and just above the base of the feature, numerous concentrations of human

remains were discovered. Particularly conspicuous were regular concentrations of skulls comprising both complete skulls and, more often, meticulously prepared skull caps or a mixture of both (Figure 3). A further, equally remarkable characteristic of these skeletal deposits was the absence of complete skeletons. Instead, they comprised regularly mutilated torsos (Figure 4), truncated long bones, or parts of the spine, pelvis, and fragmented extremities; additionally, a conspicuously large amount of heavily fragmented bone material was recorded.

The incomplete skeletons, skull caps, and complete skulls were by no means isolated finds, but occurred together with a whole range of different artefacts,

of which the most frequent is pottery. The latter is distinguished by its exceptional quality and good preservation. Additionally, there were bone implements, jewellery made from teeth and animal bone, stone beads, shells and snail shells. Flint and ground stone artefacts were also recovered. In several cases, even grinding stones were found within these placed deposits. It remains unresolved whether the regularly occurring faunal remains are representative of rituals or whether they stem from normal settlement refuse. Among the animal bones, those belonging to dogs are of particular importance and are discussed separately below. In addition to the manipulated human bones and skulls, nine regular LBK burials (flexed and extended) were observed. These were discovered either on the base of the ditches or, in four cases, as settlement burials in pits located within the enclosure. Thus, at Herxheim we have evidence of a sequence of both previously known LBK settlement elements combined with an as yet unknown and unique series of deposits placed in the settlement's enclosure ditches.

In a catalogue accompanying a special exhibition, interpretations of this exceptional LBK site were already being made at a time when excavation was still in progress (Häußer 1998). In this publication, reference is made to the high quality decorated pottery recovered from the placed deposits in the ditches. On the basis of this material, the settlement was dated to the final LBK period. The same publication raised questions about what might have led to the accumulation of at least 450 individuals: 'war or peace'? In this respect, the proposition that an act of violence had led to the death of these individuals certainly gained the upper hand, particularly against the background of apparently similar finds, such as those at Schletz (Windl 1996; Wild *et al.* 2004) and Talheim (Wahl and König 1987); however, this occurred without a definitive verdict having ever been reached about the circumstances behind the features uncovered in the ditches at Herxheim (Spatz 1998).

After the tragic death of Annemarie Häußer, who was working on the pottery from the site as part of her Ph.D. thesis, the future processing of this material became uncertain, and the overall evaluation of this important site was suddenly in question. Nevertheless, the artefacts made of bone, antler and teeth (Haack 2001; 2002; 2003), as well as those of flint (Schimmelpfennig 2001), had already been presented in the form of M.A. dissertations, and faunal remains (Arbogast 2003) and botanical microfossils (Kreuz 2001) had already been evaluated. Furthermore, the systematic investigation



Figure 4. Human torso in the inner pit enclosure ring.

of the enclosing parallel ditches had also already been undertaken by Katja Schmidt (Schmidt 2000; 2004a; 2004b), and isotopic analyses of some of the teeth from selected human individuals discovered in the ditches had been the subject of a further M.A. dissertation (Dürrwächter 2003). However, the financial means were lacking for the analysis of the pottery and the human bone material, the latter having only been briefly looked over for the purpose of preliminary reports. Both the human remains and the pottery represented key elements essential for the interpretation of the site.

Subsequently, Andrea Zeeb-Lanz, the responsible regional consultant at the State Office for Archaeological Monuments at Speyer, founded the 'Projekt Herxheim', the aim of which was to bring together a work group comprising both current and future scholars working on the various materials recovered from the site under the umbrella of a single project.<sup>2</sup> In this way, the meticulous treatment of the site could be guaranteed. Christian Jeunesse agreed to take over the evaluation of the pottery, and Zeeb-Lanz, with support from Jeunesse, Orschiedt, Haidle, and Schimmelpfennig, applied for funds from the DFG. The application was successful and funds subsequently granted for a two year period (2004/2005). The project is coordinated by the Office for Archaeological Monuments in Speyer, under the direction of Zeeb-Lanz.

Currently, the funding granted has made possible the digitalisation of the excavation plan by Fabian Haack, who, in the course of this process, is also undertaking an evaluation of the features from the settlement area – i.e. loam pits, settlement pits, slit-shaped pits (*Schlitzgruben*) and postholes – for inclusion in the final publication.

An important basis for the interpretation of the

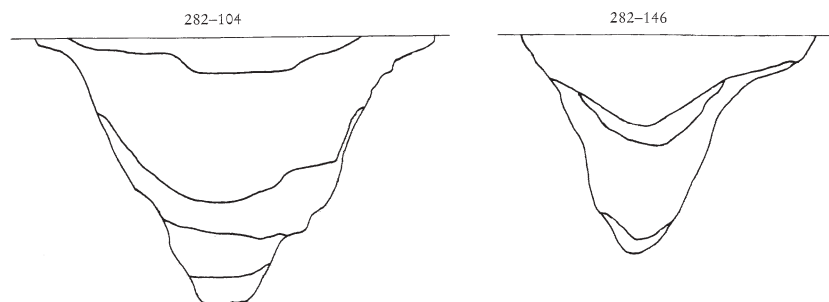


Figure 5. Cross-sections from the pit enclosure. The differing shapes of the bases from successive, overlapping features are easily distinguishable (scale 1:50; after Schmidt 2004a, fig. 10, 11).

settlement at Herxheim is the doctoral dissertation on the earthwork submitted by Schmidt in 2000 (see also Schmidt 2004a). On the basis of observations made in the profiles and longitudinal sections, it could be demonstrated that the supposed ditches were not in fact continuous, i.e. dug in a single episode, but – as is evident in the longitudinal profiles – are composed of a series of overlapping, elongated pits with different depths. Additionally, the cross-sections are characterised by a wide variation of differently shaped profiles. Besides U-shaped, trough-shaped and V-shaped profiles, areas can also be discerned in which a U-shaped ditch floor is superimposed onto a V-shaped feature, which is indicative of the recurrent digging of new features (Figure 5). These features of the Herxheim ditches mean that they can be assigned to a pit enclosure (*Grubenanlage*) of the ‘Rosheim’-type (Jeunesse 1996; Jeunesse and Lefranc 1999). Characteristic of this type is the digging of individual, successive pits along a predetermined path. These pits remain open for an unspecified period of time, although they are also partly artificially refilled. The excavation of new pits follows along a line, probably made visible in some way on the surface, with the new pits being dug into either partially or completely filled older features (Figure 6). At the LBK site of Rosheim (Alsace), where a ‘ditch’ of this type was first encountered, gaps were sometimes observed between the individual pits. However, in Herxheim this is not the case. Presumably due to its longer period of use, with recurring excavation of new pits and their consequent refilling, the feature resembles a continuous ditch in the first planum. Meanwhile, the investigation of further early Neolithic earthworks by Schmidt has shown that the ‘Rosheim’-type in fact occurs quite frequently in the LBK (Schmidt 2004b). Furthermore,

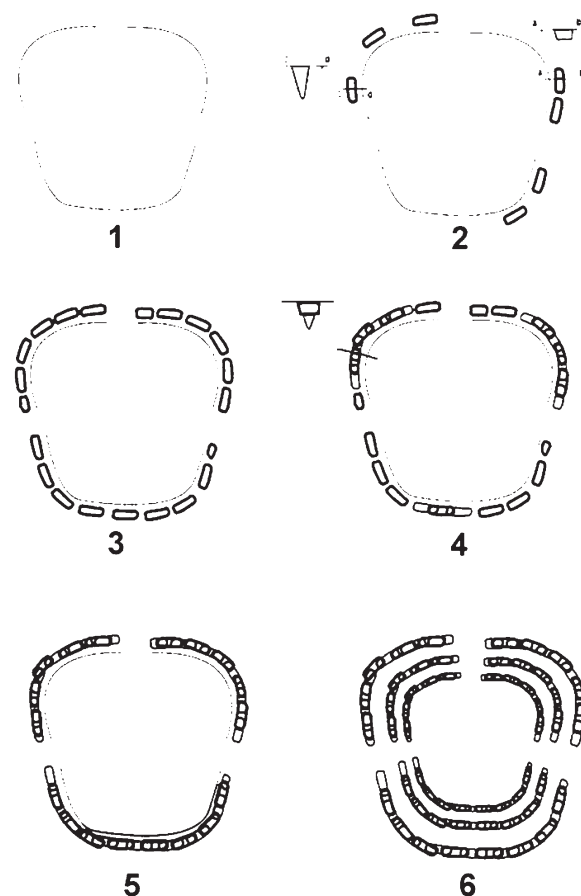


Figure 6. Model for the development of a pit enclosure ring around a settlement (after Jeunesse and Lefranc 1999, 53 fig. 30).



Figure 7. Cut marks on the side of a calotte.

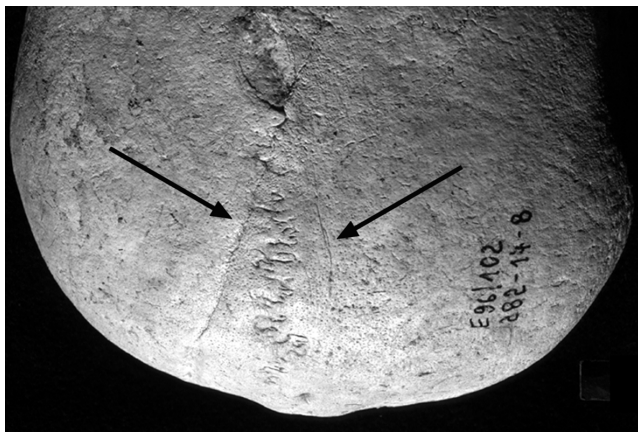


Figure 8. Example of a calotte with cut marks on the sagittal line and a healed injury (blow) to the head.

evidence was found that a number of earlier excavated LBK 'ditches' can probably also be assigned to this type of feature. In these cases, the 'ditches' were usually only investigated using cross-sections, with the evidence for the 'Rosheim'-type hidden away in the unobserved longitudinal profiles.

### Human bone material

At present, thanks to DFG funding, the skeletal remains, with special emphasis on the observable signs of human manipulation, are being investigated at the Universities of Tübingen and Hamburg. First results from these analyses, conducted by Haidle and Orschiedt, have proved to be of far-reaching significance.

Up to now, c. 50% of the skeletal material has been anatomically recorded, identified, and individual findings evaluated. In earlier, preparatory work it was suggested that skeletal elements were systematically

smashed (Häußer *et al.* 2006; Haidle and Orschiedt 2001; Orschiedt *et al.* 2003; Orschiedt 2006). This has since been confirmed not only for skulls, but also for long bones and other parts of the post-cranial skeleton. Currently, it can be assumed that at least 450 individuals of all age groups have been recovered from the excavated parts of the *Grubenanlage*, or pit enclosure. A definitive number can only be stated after the termination of evaluation work.

The modification of skull caps, which mostly display damage from blows to the foreheads and around the parietal bone, follows what can only be described as a standardised pattern. This involved about three blows to the forehead region and at least two to each side of the skull in order to detach its lower part. Additionally, around 10% of individuals show signs of cut marks along the sagittal line (Figure 7). These traces are mostly found parallel to the sagittal suture and in its extension across the frontal bone, as well as transverse to this direction below the *tuber parietalia* (Figure 8). In addition, analyses of fragments from the region of the lower forehead have shown that in isolated instances the scalp was cut obliquely directly above the orbits, after which the scalp, now cut into two halves owing to the prior incisions in the sagittal region, could be pulled off. Obviously, this was only a measure required for those individuals whose state of decay was less advanced. Probably, these were the remains of individuals who had only recently died. The patterns underlying the manner in which the skeletal remains were smashed could also be confirmed. Particularly evident was the very intensive working of long bones, the shafts of which are almost exclusively present in splintered form. Whereas the fragmentation of the long bones usually took place at a peri-mortal stage, in some cases older skeletal material was also treated in this manner. The evaluation of the skeletal remains also led to the identification, in a small number of individuals, of cut marks to the post-cranial elements of the skeleton. Soft tissue was detached from the shoulder blades, and elbow and hip joints had been severed. Therefore, manipulation of the entire human skeleton is conclusively demonstrated; previously, such practices had only been assumed for the skull and the lower jaw.

The placing of human remains in specific assemblages, their partial association with the remains of canidae, pottery, stone artefacts and other objects, as well as their standardised manipulation, all point to the performance of rituals. The earlier assumption that the site of Herxheim might provide evidence for conflict (Häußer 1998) is therefore invalidated. The extremely

high number of individuals, which if projected onto the still unexcavated parts of the site gives reason to suspect a total of at least 1,350 persons, is a clear argument against conflict. This line of argument is also strengthened by the fact that despite the high level of fragmentation and the high degree of regular manipulation of the entire bone assemblage, there are no signs of traumatic injuries which might be interpreted as resulting in a violent death. Furthermore, the proportions of skeletal elements so far found at the site do not in any way reflect anatomical reality. For example, the remains of hands and feet are clearly underrepresented. Another argument which does not support the conflict hypothesis is that bones only rarely show signs of animal gnawing, which would be expected in the case of individuals killed in conflict and initially left unburied. In addition to the lack of evidence for a battlefield scenario, there are no indications of malnutrition or nutritional deficiency from the skeletal material. Therefore, the human skeletal remains from Herxheim by no means provide evidence for an economical crisis or any other type of crisis scenario at the end of the LBK.

### Flint artefacts

The 482 flint artefacts from Herxheim have been the subject of an M.A. thesis at the University of Cologne (Schimmelpfennig 2004). They constitute an atypical assemblage for the LBK, as they display some obvious peculiarities with regard to both raw materials and morphology. Flint artefacts were recorded according to the now commonly used system developed by Zimmermann (1988), which subsequently served as the basis for the identification of both local and distant regions and sites with equivalent flint materials (Figure 9).<sup>3</sup>

The analysis of the spatial distribution of flint artefacts at the Herxheim site has revealed that the inner 'ditch' clearly dominates, with 49.6% of artefacts found in this feature. The outer ring yielded just 16% and all remaining features a total of 33.6% of the analysed artefacts.

The identification of the raw materials and their origins can provide an important insight into Neolithic communication networks and has therefore constituted an integral part of the analyses. A total of 50% of the flint artefacts from the Herxheim settlement were made from high quality Cretaceous flints. Alongside the better known varieties of Rijckholt, Rullen and Lousberg, there are also pieces made of lesser known

flint varieties, such as those from the Cretaceous units from the Paris basin. Types of flint similar to those discovered at Herxheim have also been identified, among other places, in the area of Rethel (dép. Ardennes, France) or Vertus (dép. Marne, France).

Evidence of contacts with the western part of Europe presumably includes the characteristic retouch observed on a transverse arrowhead (*Querschneider*), otherwise known from the Villeneuve-Saint-Germain und Blicquy groups (Plateaux 1990, 247 fig. 7.1–7.2). Furthermore, a number of pieces of Hesbaye flint were identified; some of these pieces originate from the Maastricht formation in the Belgium/Netherlands region. The group of so called 'Western Cretaceous flints', well represented with 12.2%, could originate from either the Netherlands, Belgium or France. In each case, the distance between Herxheim and the potential sources of these materials is around 250 km, and is therefore indicative of an extra-regional catchment area.

Large amounts of unspecific Jurassic and Muschelkalk chert have been recorded in the Herxheim assemblage. The former is found in the region of the Franconian Jura and/or the Swabian Alb, which begin around 110 km from Herxheim. Wittlinger (Jurassic) chert, the most important raw material during the LBK in the Neckar area, is also known at Herxheim, but is only poorly represented. Among the flint varieties found in the near vicinity are quartz and chalcedony, which although present in the Herxheim flint assemblage, are of the same very poor quality characteristic of Muschelkalk chert. Nevertheless, the latter was brought to Herxheim from distances of between 15 and 100 km.

As a whole, the raw material assemblage from Herxheim is characterised by very diverse flint varieties of widely dispersed origins. Particularly interesting, however, is the preference for western and northwestern sources, which is in stark contradiction to the east and northeast oriented regional pottery groups observed in Herxheim during the final LBK. However, seeing as the flint artefacts stem from as yet undated features, a direct comparison cannot be attempted; at this point it should be stressed that the flint varieties from the site are representative of the entire duration of the settlement, which began in the Flomborn phase and lasted until the end of the LBK. Therefore, for the time being, whether the distinct differences in the origins of raw material and pottery traditions are actually attributable to different spheres of communication remains unresolved.

The analysis of blanks is of fundamental importance when interpreting the stone assemblage from any archaeological site. In combination with the amount of

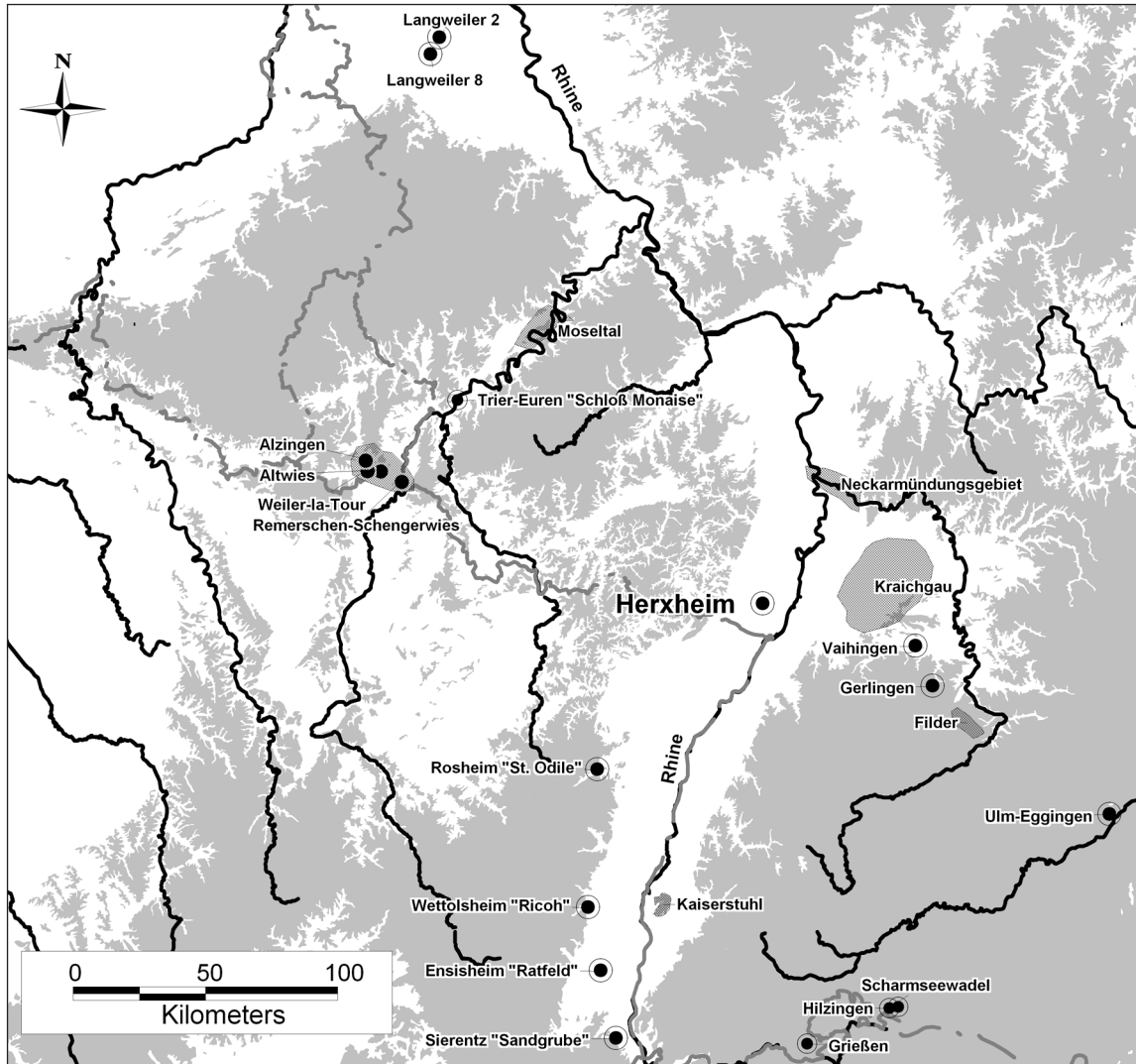


Figure 9. Location of the regions and sites with flint material chosen for comparison.

cortex, it provides information as to the condition of the raw materials upon arriving at the site, i.e. whether they were moved as nodules completely covered with cortex, as decorticated cores or as pre-fabricated blanks. The pattern underlying the exchange systems of raw materials during the LBK is understood at a relatively large scale (Zimmermann 1995), so that it should be possible to place Herxheim within an extra-regional exchange system, a contribution which might serve to further our understanding of the 'phenomenon Herxheim'. Regarding the flint distribution networks, LBK settlements generally fall into two categories. First, there are those undertaking blank production, situated in regions well supplied with raw materials, and second there are those situated in areas lacking

sufficient raw materials, and which preferred to 'import' pre-fabricated blanks. The integration of the Herxheim settlement into this pattern is not without its difficulties; on the one hand, particular manifestations occur more frequently than at other sites, but on the other, forms we anticipated to find, such as unmodified blades, are significantly rarer. Consequently, the settlement at Herxheim cannot be assigned to an exactly delineated position between the two extremes defined above. However, it is quite certain that the high ratio of modified flakes in the flint assemblage is a reflection of a shortage of blades, a factor which compelled the population to turn increasingly to flakes for tool production. Furthermore, the rather rare occurrence of unmodified blades permits an evaluation of the entire

spectrum as a regular settlement cross-section, which is not characterised by grave goods such as blades. Admittedly, as remarked upon above, this observation is limited; a final interpretation of the flint assemblage will only be possible when the artefacts have been correctly assigned to the individual phases of the settlement and its earthwork.

Raw materials, for instance the Cretaceous flints which were brought to Herxheim from great distances, probably arrived at the site in the form of pre-fabricated blanks, an assumption confirmed by the lack of both corresponding cores and characteristic waste material. On the other hand, a small number of pieces made from high quality raw material, such as chalcedony and quartz, were produced on-site, though here this takes the form of an *ad-hoc* production of individual, small blanks.

In Herxheim, the ratio of tools is not only comparatively high, but the frequency of various tool classes, such as scrapers, splintered pieces or sickle blades, differs significantly from those in other regions and at other sites. Whereas scrapers are considerably less frequent than at other sites, the number of sickle blades reused as splintered pieces is abnormally high. The question as to why non-exhausted sickle blades were rendered useless by intentional splintering might be linked to rituals surrounding the burials in the 'ditches'. Splintered pieces are interpreted, among other things, as chisels with which bones could have been split (Fiedler 1979, 117); use of the numerous splintered pieces on the fragmented skeletal remains found at Herxheim could be one possible explanation for their above average occurrence in the assemblage.

A use-wear analysis to be conducted within the frame of the research project will certainly shed light on whether bones from Herxheim were actually split using the splintered pieces found at the site. By and large, the flint artefact spectrum, with its peculiarities and widely dispersed origins, fits quite seamlessly with the exceptional status of this LBK site. The detailed assignment of flint artefacts to given archaeological features and the evaluation of the ground stone assemblage planned within the framework of the research project will show which varieties and forms are associated with the regular settlement, which of them might result from the extraordinary rituals conducted in the 'ditches' during the late phase of the Herxheim site, and which conclusions can be drawn from this evidence.

## Worked bone, antler and teeth

The large variety of bone tools and jewellery is as extraordinary as the flint spectrum (Haack 2001; 2002; 2003). In fact, the Herxheim assemblage, which comprises a total of 233 bone tools, antler and tooth artefacts, is one of the largest LBK assemblages ever discovered. Assemblages of comparable sizes are known only from the sites of Cuiry-lès-Chaudardes (départ. Aisne), Vaihingen (Baden-Württemberg), Nieder-Mörlen (Hesse) and Eilsleben (Saxony-Anhalt). At Herxheim, the bone tools clearly dominate with 180 pieces; tools made from antler number 18 pieces, and 35 artefacts are made from teeth (Figure 10). In comparison with the other sites mentioned above, antler objects are considerably underrepresented. However, the large amount of pieces made from worked teeth is even more significant. The number of perforated animal and human teeth is quite exceptional, an observation never before made at a site of this age. At Herxheim, pendants were made from the upper eye teeth of deer, boar tusks and pig canines, cattle incisors, carnivore fangs and human teeth (Figure 10.9–10.13). In some cases, several such pendants were discovered together, which might be indicative of the remains of necklaces deposited in the ditches together with the skull caps and other skeletal remains. Furthermore, the number of tools and unfinished objects made from boar tusk bladelets, which are particularly characteristic of LBK assemblages, is high, comprising a total of 13 pieces (Figure 10.6). On the other hand, there is still no plausible explanation for the relatively low number of antler tools. Despite the low ratio of deer bones in the faunal spectrum at Herxheim in comparison to other LBK sites, this does not tie in with the working of antler itself at the site, where shed antlers were used particularly frequently. However, it is remarkable that waste products and unfinished objects are largely lacking and that the pieces from the site are clearly of a tool character, sometimes with traces of considerable use-wear. Alternatively, they could be grouped with artefacts such as the tooth pendants, i.e. as objects characterised to a lesser extent by their functional capacity but with a more symbolic value, as might be the case with a 21 cm long triangular piece, probably made from elk antler, or the stray find of an antler toggle. The antler tools most frequent at Herxheim are the so called 'retouchers' made from antler tines and used in the preparation of chipped stone tools (Figure 10.5). Apart from a single heavily worn specimen of an antler pick or 'T-axe', such tools are so far unknown in the Herxheim assemblage.

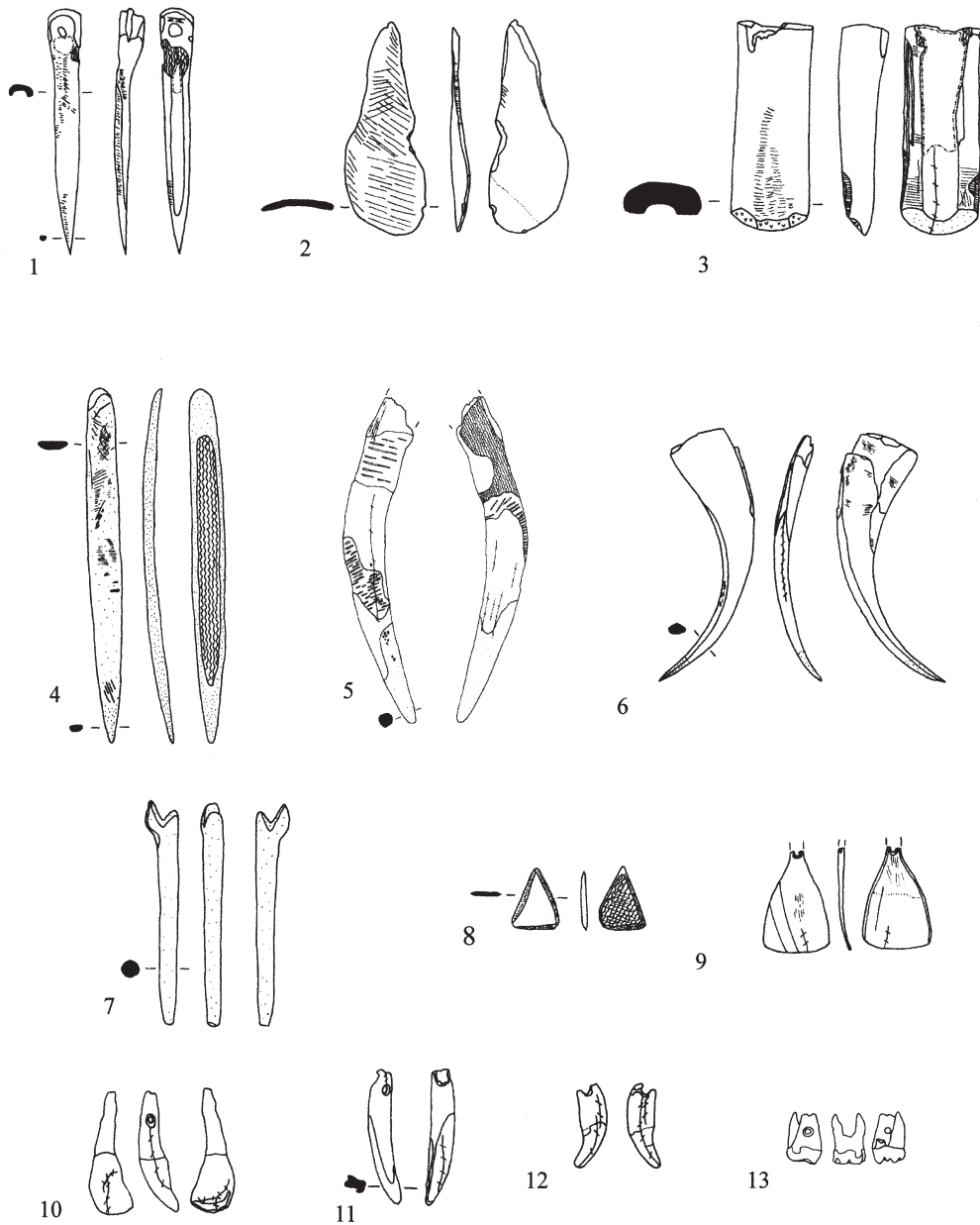


Figure 10. Representative selection of bone, antler, and tooth artefacts.

Among the bone tools, points are clearly the most frequent with 77 pieces. This category of finds is dominated, as is the case in all regions and in all prehistoric periods, by the characteristic 'awls' made of the split metapodials of sheep/goat or deer (Figure 10.1). Furthermore, two points made using the groove and splinter technique, somewhat uncharacteristic objects for the LBK, have been recorded in addition to other, rather unspecific pieces, such as large points

made of split deer metapodials used as 'daggers'. In contrast, tools made on split rib bones with a point and a rounded, perpendicular working edge (Figure 10.4) are a fundamental element in the material from early Neolithic settlements in central Europe. These objects might have been used in pottery production and with 18 pieces comprise the second largest group among the bone tools found at Herxheim. These relatively fragile tools are usually broken, so that only one of the

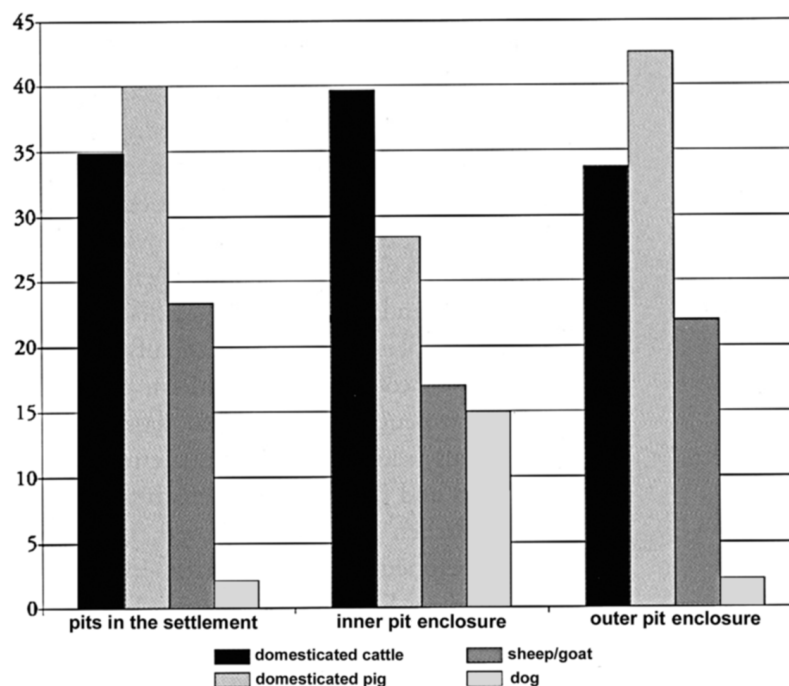


Figure 11. Distribution of animal bones among the pit enclosure rings and the settlement.

working edges is preserved. In addition, a very large part of the bone tools was probably required for the highly qualified achievements in LBK woodworking. These include two adzes with considerable use-wear traces, several heavily fragmented chisels and a bifacially worked piece which probably served as a wedge. A further artefact group comprises objects which, owing to their 'spoon-like' shape and absence of a working edge, might have functioned as receptacles for substances, i.e. as palettes and spatulas (Figure 10.2). A comparison with pieces from Rosheim 'Saint Odile' (dép. Bas-Rhin) shows that the choice of raw material for this type of implement was not down to a functional necessity. Whilst the objects from Herxheim were made almost exclusively from compact (long) bones and pieces of shoulder blade, mainly parts of rib bones were used in Rosheim.

Furthermore, there are also bone artefacts which could not possibly have served as tools. These include small bone rods (batons), but also small, faceted, triangular bone points, which are generally interpreted as arrowheads due to their resemblance to pieces made from flint (Figure 10.8). Although both types of objects are known from settlement contexts, just like antler toggles both occur frequently as grave goods, for example at the cemetery of Schwetzingen (Behrends

1997) or at Sengkofen in Bavaria (Nieszery 1995).

Besides the broad spectrum of tool types, the high percentage of artefacts otherwise practically absent from the assemblages of other LBK settlements is a characteristic feature of the bone, antler and tooth artefacts from Herxheim. On the other hand, these artefacts are objects otherwise well attested with burials, although they are not among the most frequently discovered grave goods. As their interpretation has so far not included a consideration of other categories of finds discovered within the same placed deposits, the groups of finds discussed here have probably not yet made their most significant contribution to the clarification of the character of the human skeletal remains discovered in the earthwork.

### Animal bones

Among the animal bones recovered at Herxheim, those of dog are the most abundant. Interestingly, of the more than 200 dog bones discovered at the site, nearly all stem from the inner ring of the enclosure (Figure 11), are generally complete and belong to at least six partially or completely preserved skeletons. As the bones were not smashed and could be assigned to a small number of anatomical units, it can be assumed that in contrast

to other domestic animals these individuals were not eaten. It is more likely that the more or less complete animal carcasses were part of the placed deposits in the earthwork. The bones of these animals display diverse traces of burning and cutting, which indicates that prior to deposition at least parts of the cadavers were subjected to fire and had their skull removed. However, this type of treatment has nothing to do with the preparation of food and is more indicative of post-mortem rituals.

Among the other animal bones found in the inner ring of the earthwork, there were also the lower jaws of around 20 carnivores. These are mainly from pine marten and beech marten, but also from wild cat, polecat and fox. In addition to the lower jaws, the bones from the extremities of these animals (metatarsals, phalanges) were also discovered. All of these display fine cut marks, always in the same areas. Additionally, remnants of ochre have been found on a few of the bones. These kinds of traces could be connected with the use of the animals' pelts or might indicate a specific function of these parts of the body, for instance as talismans. Other animal bone finds, such as the horn cores of cattle and small ruminants or parts of the wings of large birds (goose or crane), also underline the special character of the deposits in the enclosure pits at Herxheim.

## Pottery

After a year of activities within the frame of the research project, the analysis and evaluation of the pottery in particular have provided not only some important new insights into the chronology and origins of this material, but also into the events which took place at the pit enclosure in Herxheim.

The evaluation of the excavation records has shown that it is only in a certain number of pits of the enclosure, which are dispersed over the entire length of the earthworks excavated so far, that human skull caps and other parts of human skeletons were actually deposited together with the aforementioned categories of finds, as well as with animal bones and stone artefacts. The pottery from these placed deposits had originally been consistently dated to the latest LBK horizon, which means that until the entire pottery spectrum from both the pit enclosure and its interior was viewed by Jeunesse, the entire settlement had been assigned only to the latest phase of the LBK. However, it is now certain that the earliest houses at the site already appeared in the Flomborn phase of the LBK. Pottery sherds from the Flomborn phase, discovered in some

parts of long pits belonging to the enclosure and later refilled, are characterised by their large size and 'fresh', unweathered breaks, which are typical attributes of settlement refuse. The same applies to the material from the subsequent phase of the LBK. This means that the site was occupied continuously from the Flomborn phase throughout the entire LBK sequence.

The complexes described above, comprising skull caps, skeletal remains, pottery, and other artefacts, are without a doubt of ritual character. At present, we assume that Herxheim is a burial site of a quite particular kind. It is as yet difficult to determine whether the settlement within the enclosure was actually occupied up to the end of the latest phase of the Linear Pottery culture (LBK V) or whether the change in its function to a ritual site had led to its abandonment. It is hoped that renewed excavation work at the site (see below) will clarify this. The preliminary occupational chronology of the settlement at Herxheim is summarised as follows:

- Phase 1 (older LBK, phase Flomborn) – single sherds, pottery divided into small fragments (settlement refuse)
- Phase 2 (middle LBK) – single sherds, pottery divided into small fragments (settlement refuse)
- Phase 3 (later LBK) – single sherds, pottery divided into small fragments (settlement refuse)
- Phase 4 (latest LBK) – also single sherds (settlement refuse) but mostly high quality 'ritual pottery'.

The exceptional size of the Herxheim pottery assemblage makes it possible for the first time to define a regional LBK group for the Palatinate. Whereas the local pottery from the middle phase of the LBK can be paralleled with that from the Neckar area (Lindig 2002, especially 73 ff), by the beginning of the later phase of the LBK (jüngere LBKa) a regional variety, typical for the Palatinate, had developed.<sup>4</sup>

The origins of the decorated pottery discovered in the placed deposits dating to the latest LBK phase are astoundingly varied. Whereas the majority of the material from the latest phase is of a local variety belonging to the 'Pfalz group' (Pfälzer Gruppe der jüngsten Bandkeramik), an amazing number of high quality vessels also stems from various regional LBK groups found to the north and east of the Palatinate. Remarkably, however, there is no material from the northwest (Aldenhoven plateau) and just a few sherds from the west (Blicquy group). The hatching style typical of the Rhine-Main region and the Leihgestern style dominate among the regional pottery groups

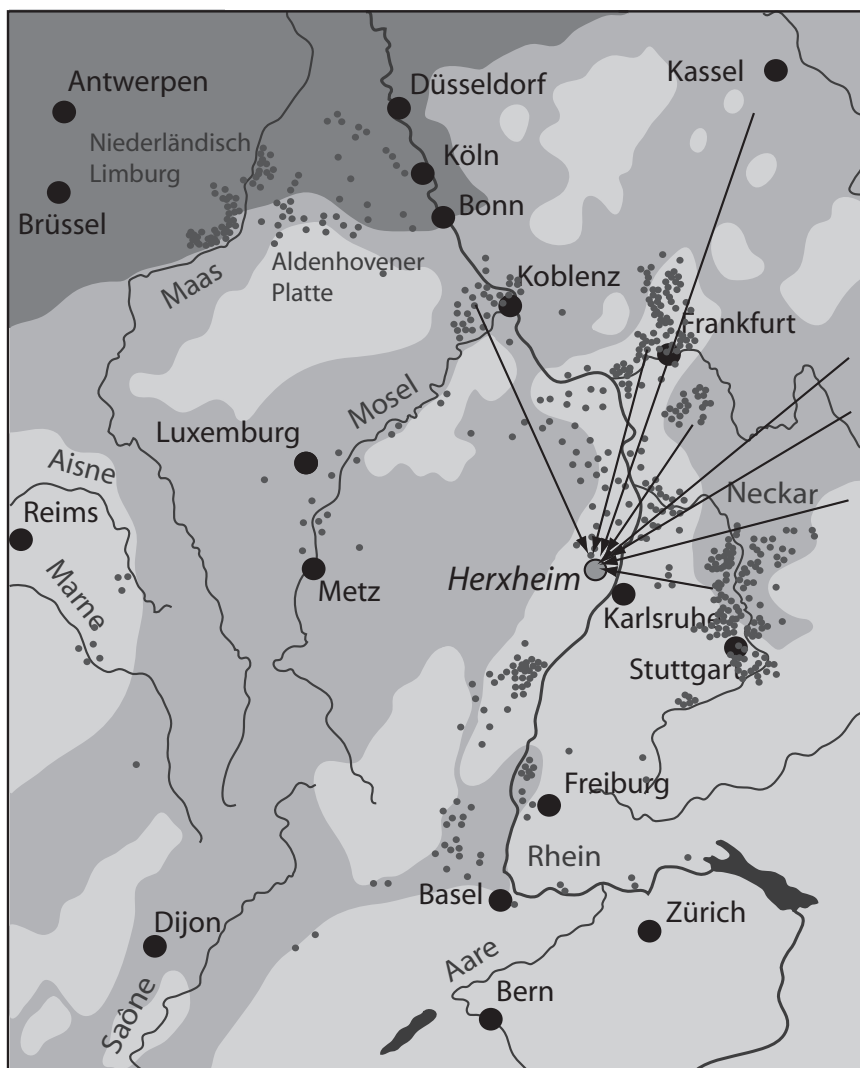


Figure 12. Regional styles of the latest LBK found in the complexes.

imported into Herxheim during the latest phase of the LBK. A similar number of vessels in the Plaidt style have also been recorded.

Furthermore, some vessels decorated in the Šárka style (LBK of Bohemia and the Elbe valley; see Venc 1961; Kneipp 1998, 175 ff), as well as a dozen vessels from the regional, but narrowly confined Elster-Saale style (Kaufmann and York 1985) have been identified. These are complemented by pottery imported from the lower Main region, and by a small number of vessels in the style characteristic of the Neckar area (Figure 12). As the analysis of the pottery from the complexes of the two enclosure rings has not yet been concluded, further surprises are certainly still to be expected.

Other important observations could also be made

with regard to the pottery from the enclosure pits. The refitting of sherds from different levels within individual pit fills, which has led to the reconstruction of partial and complete vessels, has not only indicated that rituals took place at Herxheim, but also that individual lugs were intentionally chipped off from mostly small, otherwise undamaged vessels. Whether this behaviour can be interpreted as a ritual aimed at deliberately rendering vessels useless is certainly a subject for future evaluation. The relative completeness of many of the smashed pots, among which bulbous bottles are particularly frequent, demonstrates that the pottery arrived at Herxheim in an undamaged state, only to be smashed in the course of a ritual at the side of the open pits, prior to the vessels' deposition



Figure 13. Refitted pottery sherds of differing colours: whereas the black sherd is representative of the original colour, resulting from a primary firing in a reducing atmosphere, the lighter coloured sherd is indicative of secondary contact with fire.

therein. The potential role of fire in these rituals is implied by pottery refits between sherds displaying a black colouration – resulting from a primary firing in a reducing atmosphere – and sherds with an ochre coloured surface (Figure 13), which can only be explained by secondary burning (reoxidation of the iron in the clay). Similarly, some individual skull caps also display a black colouration and partial calcination at their lower edges, which resulted from contact with an open flame.

Generally speaking, three different types of vessel deposits can be distinguished within the latest LBK placed deposits from the pit enclosure rings:

1. Smashed, but completely or nearly entirely reconstructable, decorated and undecorated vessels.
2. Small, completely preserved vessels from which only lugs or other types of handle are detached.
3. Single sherds of high quality, decorated pottery which display old breaks and for which no refits were found in the pit fill.

### First interpretations

All these signs point to different ritual practices and probably to religious backgrounds which remain hidden. At present, the following tentative scenario might be postulated for the events which took place at Herxheim during the latest LBK: delegations from an unspecified region meet at Herxheim, bringing with them either the complete bodies or partially decomposed remains or skeletons, possibly even just the skulls or skull caps, of the dead from their settlement communities. New pits are dug along the course of the enclosure ring, and fires lit on their edges. At these fires, a ritual is conducted as part of the secondary burial of long or even recently deceased relatives. Skeletons are possibly fragmented on the spot, skulls manipulated and long bones smashed. Valuable vessels are rendered useless by breakage, blades and stone tools receive a similar treatment. Grinding stones are also smashed violently. All of these artefacts, as well as the bone implements, tooth and stone jewellery and pottery, are deposited together with the human bones and skulls in the pits. This collection is supplemented by offerings of meat or the single bones of animals previously sacrificed. Subsequently, the pits are refilled.

This portrayal is only one possible variation of an obviously extremely complex ritual. However, following the present state of research we can safely say that this site was neither a latest LBK settlement with a defensive earthwork, nor are the human remains from the ‘ditches’ evidence for conflict. Rather, the fact that the earliest pits from the enclosure rings have been dated to the Flomborn phase suggests a complex and long-term construction, the background of which still requires clarification. In its latest phase, the double pit enclosure is testimony to a ritual of apparently extra-regional relevance, which according to the pottery evidence involves a whole array of regional groups from the latest LBK. This observation does not fit with the proposition of war and conflict for the latest LBK; rather, the features and finds from Herxheim compel us to re-think the previously accepted explanations, i.e. crisis scenarios, postulated for the regionalisation processes evident at the end of the Linear Pottery culture. Herxheim at least cannot be counted as an example for ‘warfare’ at the end of the LBK; the scenario at this site rather suggests a special ritual, for which members of different regional groups gathered peaceably and buried their dead in a special way together. In the light of the finds from Herxheim, the question of ‘war’ in the late LBK surely has to be reconsidered.

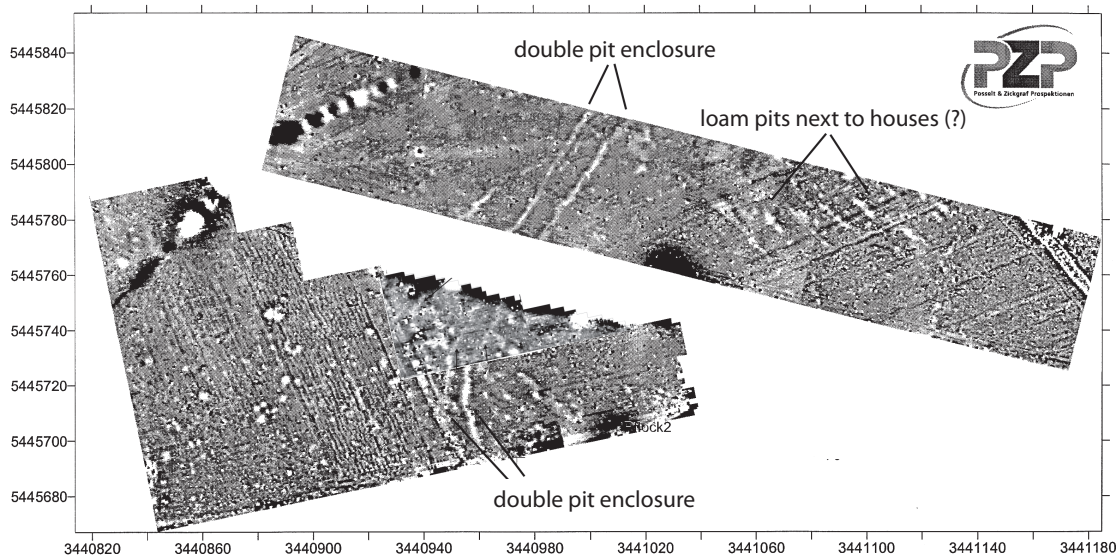


Figure 14. Results from the geophysical survey of the future excavation area and the adjacent land to the north.



Figure 15. Excavation 2006. View of the lower levels of the outer pit enclosure ring. The areas in which the individual pits either overlap or touch are easily discernible.

### The new excavations on the Herxheim site

Since June 2005, a further part of the Herxheim site (between the Rohrbacher Straße and the Insheimer Straße, see Figure 1, grey hatched area) has been subject to archaeological investigation (Zeeb-Lanz and Haack 2006). Using a specially designed excavation method, which is both sensitive to the complex features expected and takes advantage of modern technology (for example, feature documentation using a total station; 3D measurement of all finds from the enclosure pits), attempts are now being made to procure further information and to verify earlier hypotheses developed within the framework of the project financed by the DFG with regard to the previously outlined processes which occurred at Herxheim during the latest LBK. Within the new excavation area, both segments of the inner and outer ring are now being investigated using 10 cm artificial spits. In contrast to the previous excavations, these promise a much clearer picture of the changes in the individual pits constituting the two rings.

A geophysical survey<sup>5</sup> conducted prior to this work (Figure 14) clearly shows that the double rings are well preserved in this part of the site as well. Furthermore, several visible loam pits raise the hope that the excavation of this area might also yield additional information about the actual settlement at the site. With the new excavation methods, we are able to better understand the construction of the pit enclosure (Figure



Figure 16. Excavation 2006. Outer pit enclosure ring. Toward the bottom of the features the pits clearly separate from one another.

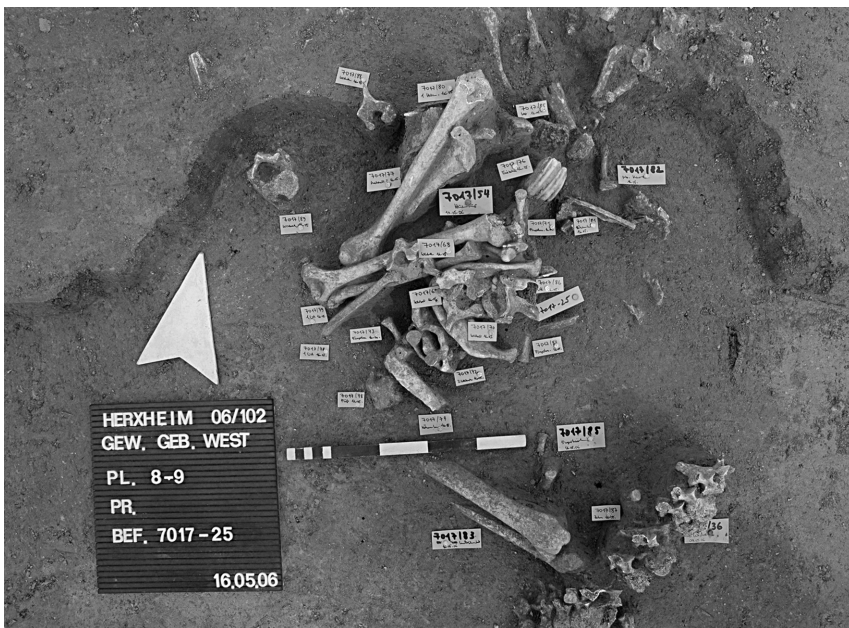


Figure 17. Excavation 2006. A complex with a large number of human bones, some still in articulation, in the inner pit enclosure ring.

15 and 16) and have the opportunity to scrutinize size, enlargement and composition of the extraordinary deposits in the pits of the enclosure (Figure 17) on a highly advanced level. Due to the generous financial support from the municipality of Herxheim and the local company CATEM, a total of three excavation

campaigns are planned for this part of the site. This time slot is perfectly adequate for a thorough excavation, and provides ample time to turn attention to issues concerning archaeobotany, geophysics and other related disciplines.

The municipality of Herxheim will also profit

directly from the results of the scientific evaluation of the 1996–1999 excavation campaigns and from future fieldwork at the site. All new insights are channelled directly into the presentation of the site at the new Neolithic museum located in the municipality itself (“SIS – Steinzeit im Scheunen Keller”), which was inaugurated in April 2005.<sup>6</sup> Here, many of the finds from the first campaign can be viewed and the inventory will be added to continuously. Thus, we are not only in the position to publish the results of the DFG project, but we also have the opportunity to present the finds of this sensational site, so far without direct parallel in the entire central European Linear Pottery culture, in their very own museum.

### Acknowledgements

Thanks are due to the Deutsche Forschungsgemeinschaft (DFG), who has generously supported this project on several occasions. We would like to extend our gratitude to Prof. Dr. A. Zimmermann, Institute for Prehistoric Archaeology, University of Cologne, who kindly agreed to act as secondary applicant to this project.

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### Notes

- 1 This article describes the results of research and interpretation up to the year 2006. Since then, the analysis of the site has already advanced much further.
- 2 For additional information, visit [www.projekt-herxheim.de](http://www.projekt-herxheim.de)
- 3 Regions and sites considered: Rhineland [particularly Langweiler 8 (Zimmermann 1988), Langweiler 2 (Langenbrink 1996)], Moselle valley (Schmidgen-Hager 1993), Württemberg (Strien 2000), Kraichgau (Heide 2001), the confluence of Neckar and Rhine (Lindig 2002), Alsace [Rosheim ‘Sainte-Odile’ (Mauvilly 2000), Wettolsheim-Ricoh (Mauvilly 1997), Ensisheim (Mauvilly 1993a) and Sierentz (Mauvilly 1993b)], Luxembourg (Hauzeur 2006), Kaiserstuhl region (Stöckl 1992), as well as the sites Trier-Euren ‘Schloß Monaise’ (Schmidgen-Hager 2003), Gerlingen (Strien 1999), Stuttgart-Möhringen 6 (Strien 1999), Ulm-Eggingen (Kind 1989) and the settlements Hilzingen, Scharmenseewadel and Griefsen (Neubauer-Saurer 1993) near Lake Constance.
- 4 The exact chronological subdivision of the Linear Pottery culture in the Palatinate, for which Jeunesse has already identified five preliminary phases, will be undertaken by S. van Willigen in the course of the DFG project on the basis of pottery seriation methods.
- 5 The geophysical survey was conducted by Martin Posselt M.A. (Firma PZP).
- 6 For additional information, visit [www.museum-herxheim.de](http://www.museum-herxheim.de)

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