

## The Late Bronze Age Cemetery at Neumarkt an der Ybbs: Spatial Analysis and Natural Scientific Technologies to understand it better.

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**Abstract:** The cemetery at Neumarkt an der Ybbs was excavated in 1997 and 2000 by the Bundesdenkmalamt. 91 burials and also contexts related to former buildings were recorded, which appear to imply the planned use of space. The graves belong to the Böheimkirchen group of the Věteřov culture, which established itself here towards the end of the Early Bronze Age. The culture maintained extensive trade relations, which stretched to the Mediterranean region, where urban structures are known. The cemetery was dominated by a central area, which presumably contained the burials of influential people. The skull of a man was buried in the northeast, its position marked by wooden posts. The skull probably came from a grave in the northwest, an area in which not only a headless corpse, but also two women with unusual jewellery were found. In the southwest the remains of a house were found in which three large vessels stood in a pit. Natural scientific analyses such as DNA, radiocarbon, and tin and strontium isotopic analysis would lead to valuable new information and to a more exact interpretation of this dynamic memory machine, which in turn would contribute to the “fex” project and assist research into the influence of social change during the Bronze Age on women’s quality of life.

**Keywords:** Early Bronze Age, Cemetery, Skull Deposit, Funeral Buildings, fex

### Cemetery

Neumarkt on the Ybbs River is located in western Lower Austria, immediately south of the Danube. In 1997 and 2000 rescue excavations were prompted by gravel extraction and conducted by the Bundesdenkmalamt under the direction of Franz Sauer (SAUER & CZUBAK 1997; SAUER & CZUBAK 2000). Gustav Melzer had already uncovered 38 graves from the beginning of the Early Bronze Age 200 m southwards in 1961 (MELZER 1974). The new excavations now led to the uncovering of the central area of a late Early Bronze Age cemetery, on the southern edges of which settlement remains from the mid-Neolithic and the La Tene period were found (fig 1.). The boundary of the cemetery has already been reached on the west side while the area bordering on the east side has been completely destroyed by gravel extraction. It is possible that part of the cemetery survives on the agricultural land to the north of the excavation area. A geomagnetic analysis of the ground would be important here to answer questions relating to the horizontal stratigraphy.

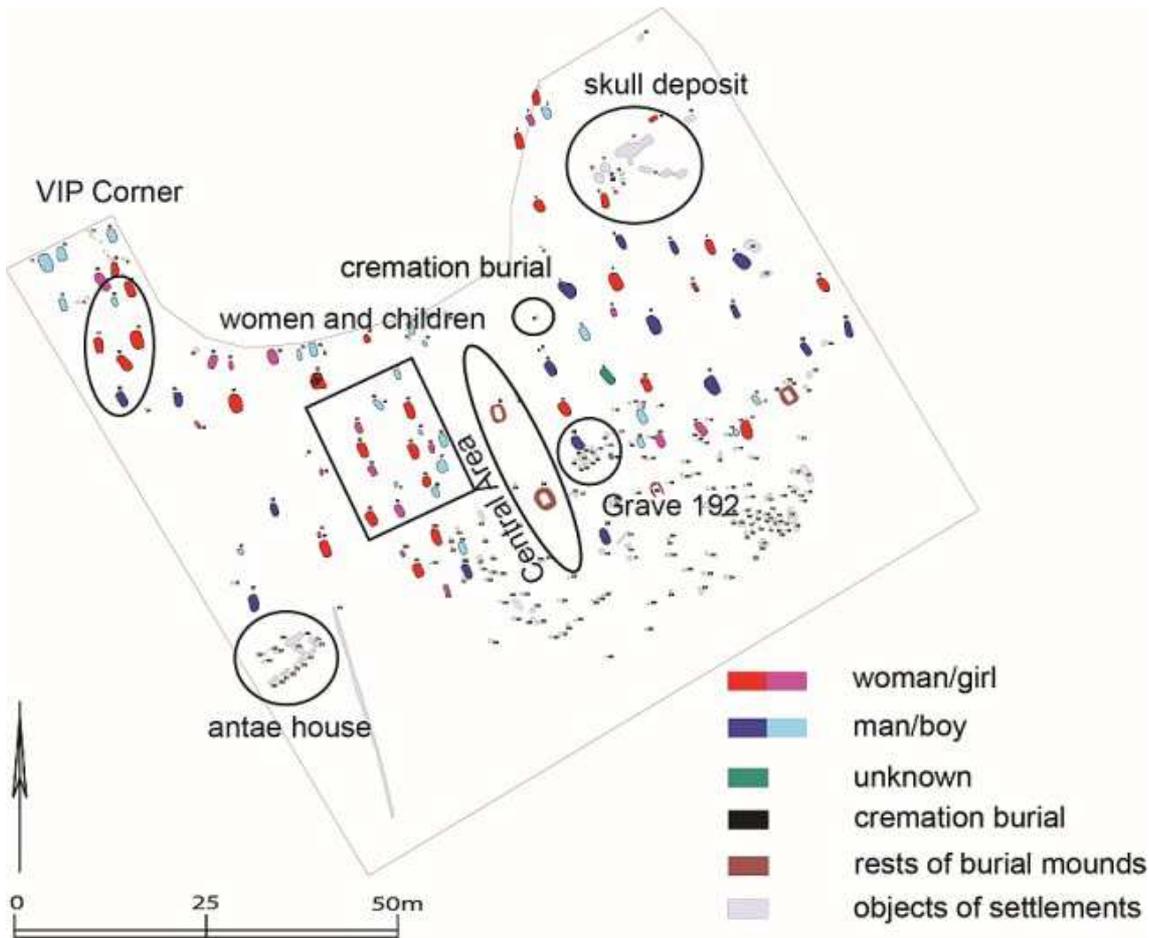


Fig. 1 – The use of space at the cemetery at Neumarkt an der Ybbs (Copyright: Bundesdenkmalamt).

89 graves contained the skeletons of 28 women, 18 men and 42 children (17 girls and 25 boys). They were buried in the so-called bell beaker tradition – men with the head to the north, women with the head to the south, both looking eastwards – lying on their sides with tucked up legs. The Early Bronze Age custom of burying the dead with food and drink in ceramic vessels had been followed for 700 years, but was no longer practiced at the end of the Early Bronze Age, so that only bronze objects – jewellery, weapons, tools – and not a single pottery vessel were found in the graves. Mainly women and children wore bracelets and in the shoulder area bronze, perforated globe-headed pins (*schräggelochte Kugelkopfnadeln*), to fasten their clothes. Children often wore simple earrings made of bronze wire. Daggers or axes were discovered in several exceptional men's graves. A single cremation burial without grave goods was discovered. The bronze finds and the position of the dead mean that the cemetery belongs to the Böheimkirchen group of the Věteřov Culture, a regional expression of that culture. The nearest comparable cemetery is Gemeinlebarn F in the Traisen Valley (NEUGEBAUER 1991).

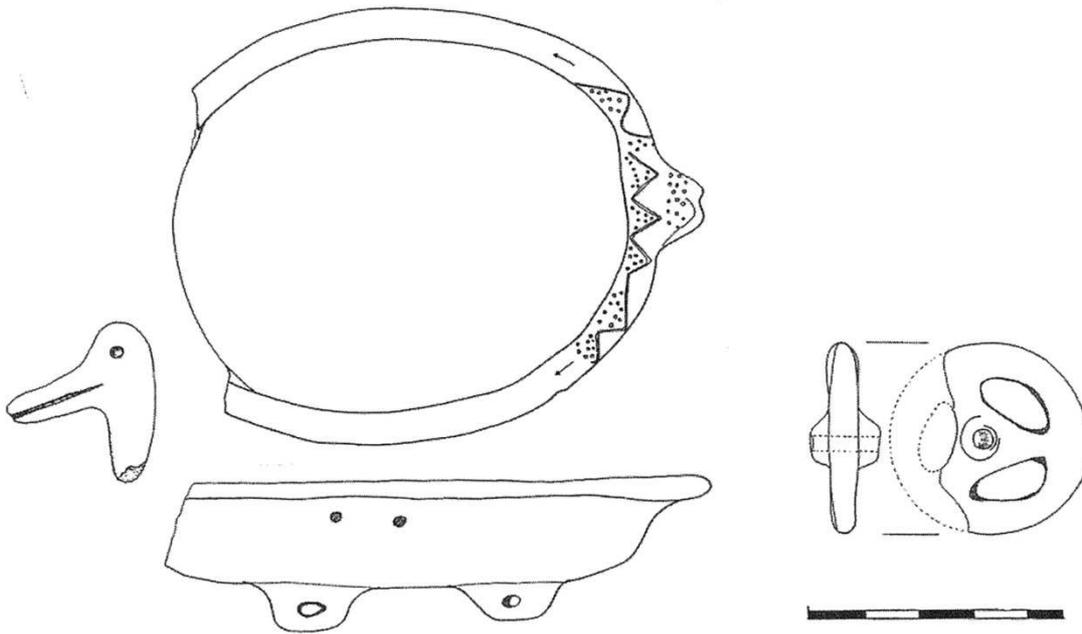


Fig. 2 – Böheimkirchen, miniature cart in animal form from the Věteřov settlement (from Neugebauer 1994, Abb. 64/6-8).

### Böheimkirchen Group of the Věteřov Culture

The people lived at the end of the Early Bronze Age and at the beginning of the Middle Bronze Age. They are identifiable by the forms and decoration of their pottery and are thus distinguishable from other cultures and cultural groups (NEUGEBAUER 1994: 119-140). Their settlement area encompassed Bohemia, Moravia, northern Lower Austria and Slovakia (in that country they are known as the Mad'arovce Culture). They lived on exposed hilltops or in flatlands. They built wooden houses, either with earthfast posts and clay-plastered wattle walls, or as block houses on a low stone plinth<sup>1</sup>. Hearths and ovens were built of clay in the interior of the houses. Hilltop settlements could be protected by ditches and earthen ramparts. Settlements of this type have been discovered at Großweikersdorf, Poysbrunn, Buhuberg, Oberleiserberg, Böheimkirchen and elsewhere in Lower Austria. The remains of such a settlement can be very substantial. Sieves (Siebgefäße) and pottery spoons, and even miniature carts in animal form are known, as well as the usual fragments of pottery vessels (fig. 2). Also of pottery are the so-called "Brotlaibidole", small tablets with patterns consisting of rows of dents, the meaning of which is still not clear (fig. 3/1). Their distribution over a wider area would suggest that they played a role in trade and cultural exchange with remote territories (Upper Italy and the Danube valley as far as Romania). There are remains of bronze production in the settlements: clay tubes for bellows to smelt the metal, and stone moulds have survived for 3,500 years under the earth. The moulds were used to produce jewellery (fig. 3/2), tools and weapons, like those found in the

<sup>1</sup> Both construction methods are present in the Neumarkt an der Ybbs cemetery, in the form of earth marks of the rotted posts or of layers of stones.

graves. Pins were particularly in demand. Women fastened their clothing with two pins in the shoulder area, while men used only one for that purpose. Those who could afford it used a decorated bronze pin, which was closed with a cord. Snaffles of animal bone were decorated with spiral patterns, similar to those used in the Aegean area (Fig. 3/3). Contact to the advanced Greek culture is presumed for this reason. Flint artefacts, loom weights, spinning whorls, and grinding and polishing stones are further evidence of vigorous activity aimed at supplying the population with food and clothes. The resulting rubbish was dumped in pits, which had been originally dug to store supplies. Unusual vessels were presumably used for special purposes: With careful breaking human skulls were adapted to become skull beakers (NEUGEBAUER 1994: 133). A male skull was deposited in a pit in the cemetery at Neumarkt an der Ybbs (skull deposit 26, see below). It was presumably taken from a grave and can therefore be described a secondary grave intrusion.

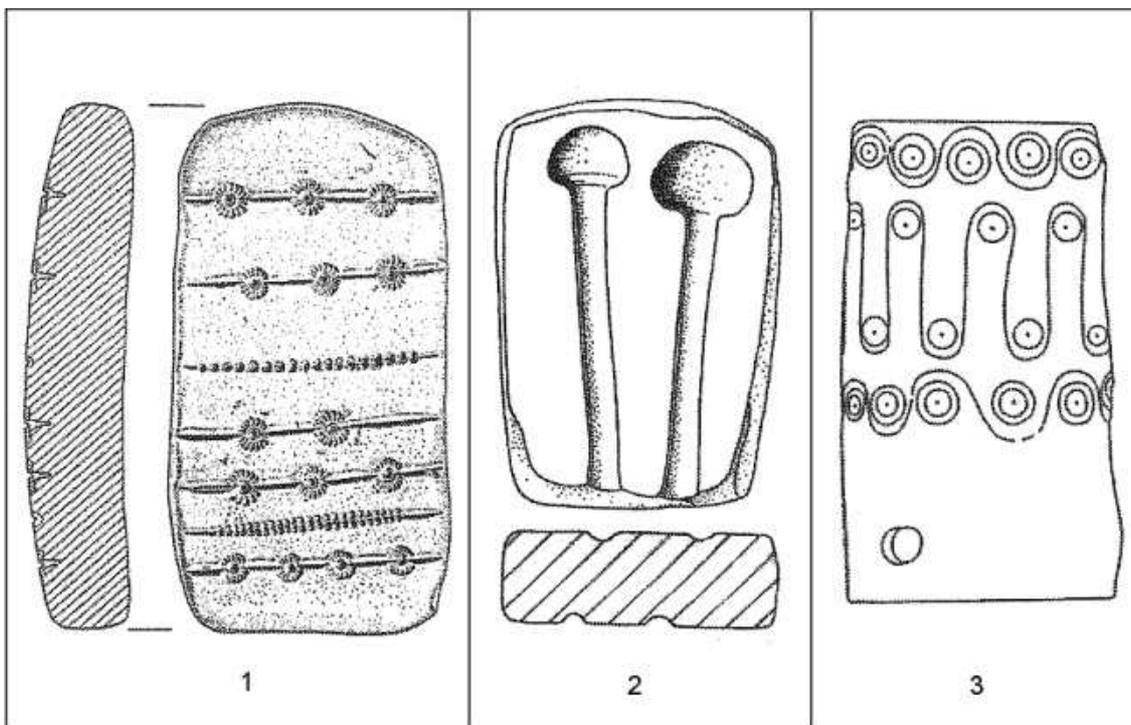


Fig. 3/1 – Franzhausen, "Brotlaibidol" (from Neugebauer 1994, Abb. 63/4). Fig. 3/2 – Böheimkirchen, stone mould for the manufacture of globe-headed pins (from Neugebauer 1994, Abb. 70/6). Fig. 3/3 – Buhuberg bei Waidendorf, Bone snaffle with spiral decoration from the settlement (from Neugebauer 1994, Abb. 64/1).

### Secondary Grave Intrusions

The secondary manipulation of graves is characteristic of the Early Bronze Age. It is recognizable by displaced or absent bones. At the outset a distinction has to be made between intentional change and post-mortem processes, such as decomposition gases, the disintegration of the coffin and the burrowing of animals, which can lead to the movement of bones. If natural causes can be ruled out, then we can speak of manipulation carried out by people. It is sometimes very difficult to decide whether natural or intentional changes were involved (REITER 2008: 48-56).

### **Grave Robbing**

Funnel-shaped robber cuts – a feature which results from the filling of a pit dug to reach the grave – are a very good indication of secondary grave intrusion. In an ideal situation the robber cut is recorded directly above the upper body, where most of the jewellery was found. The grave robbing can take the form either only of the mixing up of the bones or of the removal with the jewellery of the entire upper body, something which happened only when the skeleton was still articulated. Sometimes a skeleton has only been moved very slightly or not changed at all, but the jewellery has been taken, as green stains on the bones demonstrate (SPRENGER 1999; ASPÖCK 2003: 241-242).

### **Bone Manipulation**

Theft is a motive we can easily understand, but it is not necessarily the reason for a secondary grave intrusion. Who today feels the need to take the thighbone of an ancestor with them on the plane? However, in an archaeological context, intrusions in graves can be seen in which the mortal remains are carefully piled up within the grave. Sometimes individual bones are removed and this is particularly clear when the skull is absent, as in the case of Graves 10 and 80 in the cemetery at Neumarkt an der Ybbs. If a grave intrusion has obviously taken place, but valuable bronze objects have been left, then this is a particular puzzle. In the Early Bronze Age this phenomenon is particularly noticeable in the case of bronze daggers and axes. How can it be explained? Has the thief overlooked the object? Is it a taboo to take these weapons? Would the thief betray himself by carrying such conspicuous weapons? This leads to a further question: Who were in fact the robbers? There are several theories here: It could be descendants claiming their inheritance, or a simple case of material enrichment. In Gemeinlebarn F parts of skeletons from other graves were found in graves and seen as evidence of systematic looting. The destruction of a place of memory important to the construction of identity could be a motivation in a war context (NEUGEBAUER 1991: 128).

The degree of destruction in the Böheimkirchen group cemetery Gemeinlebarn F is 94% (NEUGEBAUER 1991: 132), while at Neumarkt an der Ybbs this figure is only 18%. The Neumarkt cemetery is very probably somewhat younger than Gemeinlebarn F<sup>2</sup>, perhaps meaning in this case that the Neumarkt burials took place later than the period in which systematic looting was common and were therefore exposed to only few secondary intrusions.

### **Use of Space**

The finds from these settlements and cemeteries of the Böheimkirchen group reveal far reaching cultural and trade networks, which can be traced all the way to the Mediterranean. The beginnings of a proto-urban use of space originate there and can be noticed in contemporary settlements. A division into different areas can

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<sup>2</sup> In Neumarkt the tradition of burial goods of food and drink no longer occurs, the crescent-shaped pins (sichelförmige Nadeln) from Grave 66 point to the transition to the Middle Bronze Age, the radiocarbon dating of the skull deposition is younger than the radiocarbon dates from Gemeinlebarn F.

be recognized in the Neumarkt an der Ybbs cemetery, indicating a planned use of space along functional lines similar to a city; one could call the cemetery a “city of the dead”.

### Central Area

A stretched-out long central area divides the cemetery into a right and a left side. Two features were recorded in this central area, which presumably represent the remains of two burial mounds, on the edges of which the remaining graves were laid out. Comparable remains of a proven burial mound were recorded in Unterradlberg (BLES 2002). Perhaps those buried in the mounds were people in a leading function, whose tasks are reflected in the central location. The next graves are at somewhat of a distance.

### Guard

Grave 192 is one of the nearest graves and consist of a man who was buried with a dagger in his hand, while a small house stood at his feet. The outer walls survive in the form of two rows of four post holes (fig. 4). The roof was supported by two ridge posts. Perhaps the man with the dagger had a special function that extended beyond his lifetime and the little house is connected to that function. Maybe he is the guardian of the central area.

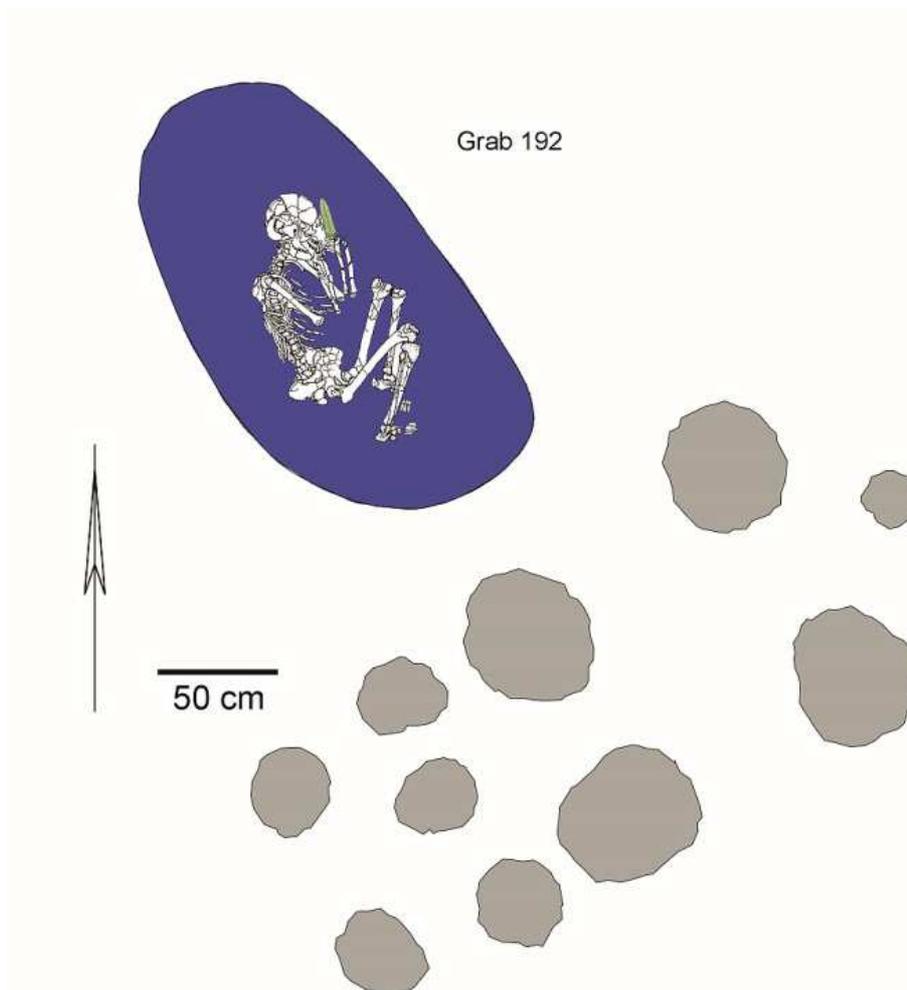


Fig. 4 – Neumarkt an der Ybbs: house plan from before Grave 192 (Copyright: Bundesdenkmalamt).

## Women and Children

28 women and 42 children were buried in the cemetery, meaning that one woman on average lamented the death of almost two children. A particular concentration of women's and children's burials is noticeable to the west of the central area. This could be an area where women were buried beside their dead children or visa versa. DNA analyses of the skeletons concerned would show, for example, if the fifty-year old woman in Grave 48 is the mother of the three children of one and a half, four and a half and eight years old buried beside her. Blood relations, if proven, could test the exactness of the radiocarbon method, which is very sensitive in this time period (PEŠKA 2012).

Why did so many children die?

Anthropological analysis by Karl Großschmidt (Histologisches Institut, Medizinische Universität Wien), examining the development of the teeth, has revealed the exact age of the children at death. Stress marks are "stored" on the teeth over the course of a life and are visible in the form of hyperplasia. An exact analysis would show whether the care and treatment of the children is connected to the amount of jewellery, which they wore at burial. Stress could be the result of lack of food, cruelty or high demands on the body.

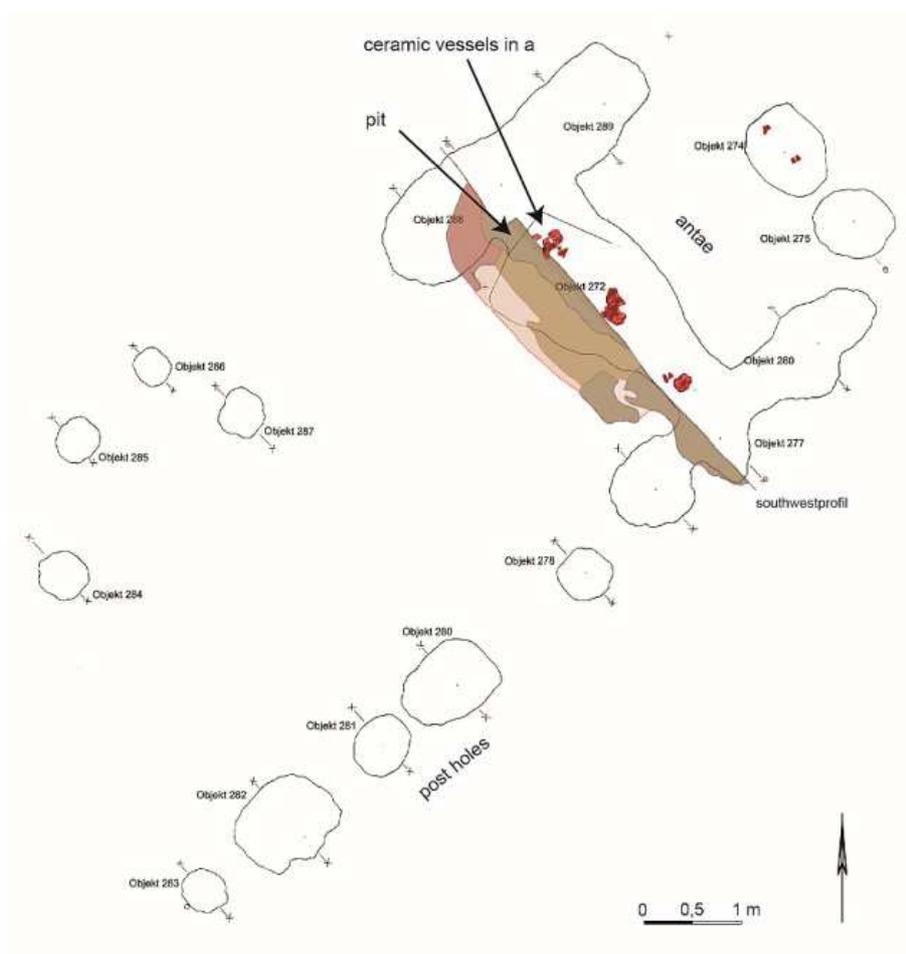


Fig. 5 – Neumarkt an der Ybbs: Antae house. The section shows that the pit in which the vessels stand extends beneath the house (Copyright: Bundesdenkmalamt).

## Antae House

A large house stood at the western edge of the cemetery (fig. 5). This building includes walls, which extend beyond the front wall and is therefore called the antae house. Inside, three large pottery vessels were situated in a rectangular pit beside the front wall. Their content was presumably stored for funerary rituals.

### *How can a house plan be dated?*

Domestic structures leave different remains in the earth – or they disappear without trace. The best examples are Early Neolithic long houses, without doubt the best-known houses, despite being the oldest, as a construction technique relying on earthfast posts leaves characteristic marks in the earth for thousands of years. If a datable artefact is found in a post hole belonging to such a house, then it is presumed to have got there as the post was fixed in position, that is when the house was built. This means that the date of its erection can be found out. The house plan at Neumarkt an der Ybbs is easily recognizable and can be dated by the antae projection, if only within a very broad range, that is from the Mid-Neolithic (SAUER 2006; NEUGEBAUER 1994: Fig. 50) to the Bronze Age (NEUGEBAUER 1994: Fig. 42) and beyond. Neolithic houses generally aligned north-south, while Early Bronze Age houses are aligned more or less east-west (SCHMITZBERGER 2004: 763). No artefacts were discovered in the post pits at Neumarkt, but were found instead in a rectangular pit, which extended under the outer wall of the antae house and is therefore stratigraphically older than it. Three large vessels stood upright in this pit at regular intervals, but are presently missing. They would presumably date the house more accurately than construction technique and alignment.

A similar situation is known from Lăpuș, a site in Transylvania (KASCÓ et al. 2012: 448-451). The antae house there is aligned north-south and was used for extensive ritual activities. It includes several burnt layers and construction phases. Pottery was found in the form of layers of sherds, as was animal bone. This house was used from the 13th to 12th centuries BC, that is for around 100 years, before being covered by a mound of earth. Perhaps the house at Neumarkt an der Ybbs was an antecedent of a burial tradition, which took place “indoors” in the cemetery area and was widespread shortly afterwards in southeast Europe.

## VIP Corner

In the north-western corner of the cemetery several graves were discovered, which showed signs of unusual treatment. Four graves showed traces of secondary intrusions, involving the removal of parts of the skeleton. In Grave 80 the skull of a 55-year old man was missing. Graves 66 and 78 had not been disturbed. In Grave 66 lay a woman with jewellery – crescent-shaped pins (sichelförmige Nadeln) and a pendant – that is typical of the area of modern Slovakia (REITER, Typ Včelince, in progress). Strontium isotopic analysis could show whether or not this woman really did emigrate to Neumarkt an der Ybbs. This could prove whether or not imported funereal jewellery can tell us about the origins of the wearer. The pendant, that the woman wears, is not only typologically rare, but is also remarkable because of the high proportion of tin it contains. The search for prehistoric tin deposits is a very important new research area, to which the analysis of the pendant by means of tin isotopic analysis could now contribute (HAUSTEIN & PERNICKA 2008). The woman in Grave 78 had been adorned with a disk-headed pin (Rondellnadel), a particularly rare and very much regional piece (BLESL & REITER, Rondellnadel, in progress). As we have seen, people were buried with

very particular grave goods in this corner of the cemetery. Some of the graves were "recycled" (Grave 80), others remained untouched (Grave 66, Grave 78).

### Cremation Burial

A single cremation burial was found in the cemetery (Grave 29), a form of burial that is an exception for this period and for this region. The burnt bone was tipped into a small pit, which was refilled without the deposition of grave goods. Anthropological analysis has identified a 30-50 year old man, who was buried in the central area in the first row of burials. The location suggests social integration despite the unusual burial form. By comparison, the single cremation burials in Franzhausen and Ratzersdorf, cemeteries of the Unterwölbling cultural group, were placed at the edge of the cemetery (REITER 2008b: 197).

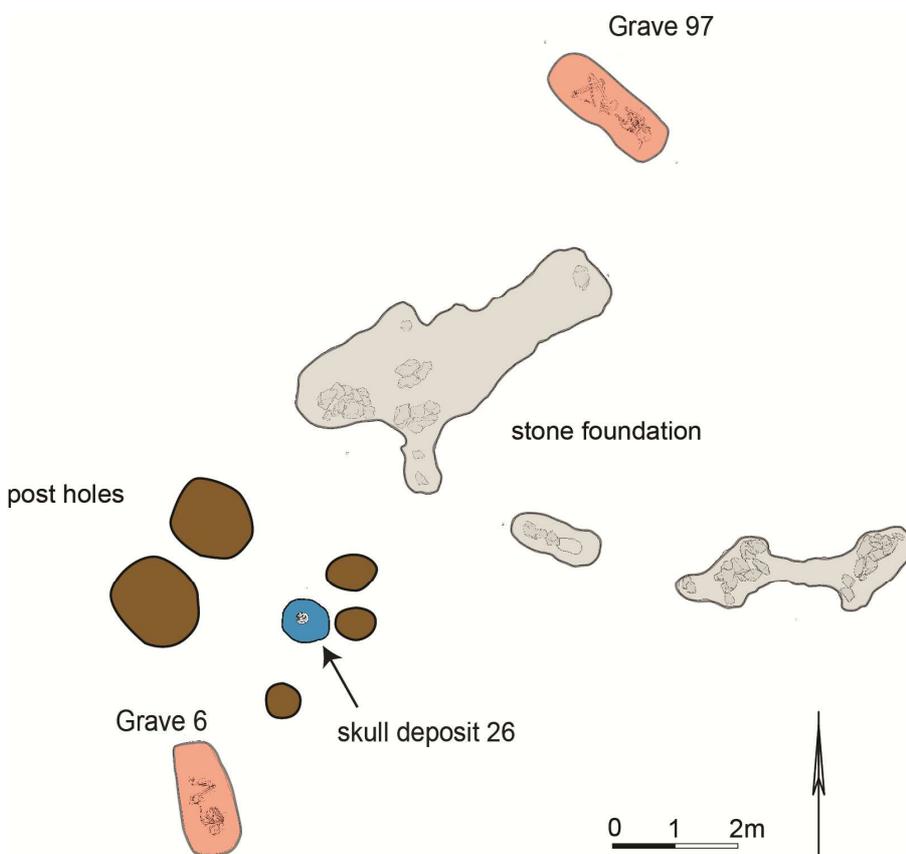


Fig. 6 – Neumarkt an der Ybbs: Skull deposition 26, 15th century BC (Copyright: Bundesdenkmalamt).

### Skull Deposition

A prominent grave group was located in the northeast: The skull of a man was buried in a pit, which was surrounded by 5 posts (fig. 6). This skull could derive from the previously-mentioned Grave 80 as DNA analysis would show. The skull deposition was flanked by two exceptionally adorned women. The women wore head dresses that were fixed with a pin at the back of the head. They wore very rare double bracelets. Pits with layers of stone were found between the graves. These are probably also the remains of a house. The grave group – it seems likely that the three graves and the house have to do with each other – is somewhat at a distance from the rest of the cemetery. The location of the skull was visible from a

considerable distance because of the posts or rather a structure supported by them. It could thus be further adapted if required, for example to a skull beaker. It may be that activities took place in the house, which had to do with the skull or the two dead women. It is even possible that after these activities the entire grave group was covered with earth and thus disappeared beneath a large burial mound. Radiocarbon dating of the skull gives a date of death towards the end of the 15th century BC. This absolute date stretches into the Middle Bronze Age, the burial mound period.

### Dynamic Memory Machine

The remaining graves were arranged in loose rows between these conspicuous “neighbourhoods”. The lack of fine distinction in the dating of the cemetery makes it impossible to reconstruct the order in which they were buried. One of the graves was the first, and one was the last, between them are around 200 years. Areas in which funeral rites for exceptional dead people appear to have been deliberately left empty as the cemetery was founded. When the cemetery was discovered 3,500 years later, this dynamic memory machine was found frozen in its abandoned final state.

Analysis	Purpose
Geomagnetic ground analysis	Does the cemetery continue northwards?
DNA Analysis	Blood relations Woman-Child Correlation Skull-Body
Radiocarbon dating	Establishment of absolute age
Hyperplasia on children’s teeth	Children’s living conditions
Strontium isotopic analysis	Migration of the woman from Grave 66
Tin isotopic analysis	Source of the tin from Grave 66

Tab. 1 – Overview of natural scientific research methods.

### Outlook

The cemetery at Neumarkt an der Ybbs is currently being analysed as part of the research project “fex” (The female sex in archaeology) in preparation for a scientific monograph (Tab. 1). The project aims to scan archaeological sources for women’s questions (REITER, Frauenspezifika, in progress) and thus to reconstruct a relevant woman’s role in the past, which matches the present state of research. The project focuses on the Bronze Age, because in that period it was possible for the first time to accumulate, transport, inherit and protect wealth in the form of metal objects. These factors and the control of raw material extraction sites changed society significantly in that era. The project hypothesis is that men’s need for “legitimate” descendants led to repressive encroachment on female fertility practices, then and now. Bronze Age graves such as that at Neumarkt an der Ybbs make it possible to investigate this question and thus to learn to recognize sources specific to women and to look for the origins of contemporary clichés.

(Translation: Paul Mitchell)

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