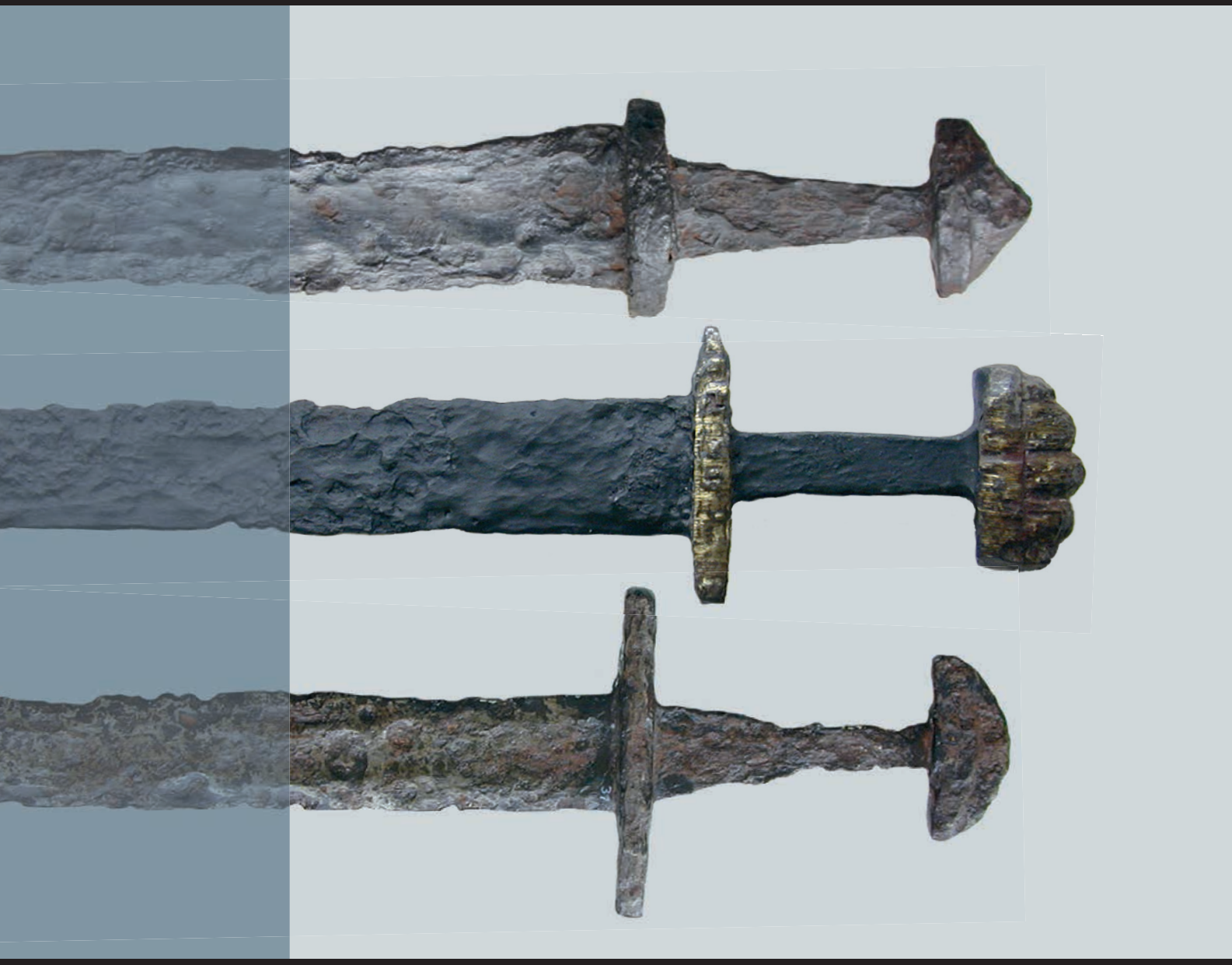
IX

INTERNATIONALE TAGUNGEN IN MIKULČICE



BEWAFFNUNG UND REITERAUSRÜSTUNG DES 8. BIS 10. JAHRHUNDERTS IN MITTELEUROPA

Waffenform und Waffenbeigaben bei den mährischen Slawen und in den Nachbarländern

MORAVIA MAGNA

ARCHÄOLOGISCHES INSTITUT AV ČR
BRNO 2019

Lumír Poláček – Pavel Kouřil (Hrsg.)

Bewaffnung und Reiterausrüstung des 8. bis 10. Jahrhunderts in Mitteleuropa

Waffenform und Waffenbeigaben bei den mährischen Slawen und in den Nachbarländern

SPISY ARCHEOLOGICKÉHO ÚSTAVU AV ČR BRNO
50

INTERNATIONALE TAGUNGEN IN MIKULČICE
(ITM)

herausgegeben von

Lumír Poláček

PROJET MORAVIA MAGNA

MORAVIA MAGNA

sous le patronage de

UNION ACADÉMIQUE INTERNATIONALE
BRUXELLES

UNION INTERNATIONALE DES SCIENCES PRÉHISTORIQUES
ET PROTOHISTORIQUES
(C.I.P.S.H. - U.N.E.S.C.O)

ARCHEOLOGICKÝ ÚSTAV
AKADEMIE VĚD ČESKÉ REPUBLIKY, BRNO, v. v. i.
BRNO 2019

INTERNATIONALE TAGUNGEN IN MIKULČICE
Band IX

BEWAFFNUNG UND REITERAUSRÜSTUNG DES 8. BIS 10. JAHRHUNDERTS IN MITTELEUROPA

Waffenform und Waffenbeigaben bei den mährischen Slawen und in den Nachbarländern

herausgegeben von
Lumír Poláček – Pavel Kouřil

ARCHÄOLOGISCHES INSTITUT
DER AKADEMIE DER WISSENSCHAFTEN
DER TSCHECHISCHEN REPUBLIK, BRNO, v. v. i.
BRNO 2019

Gedruckt mit Unterstützung des Editionsrates der Akademie der Wissenschaften
der Tschechischen Republik

Begutachtet von

Prof. dr hab. Krzysztof Jaworski und prof. PhDr. Alexander T. Ruttkay, DrSc.

ISBN 978-80-86023-59-5
ISSN 1804-1345

Inhalt

Vorwort

Der vorliegende Band enthält Beiträge, die während der gleichnamigen Internationalen Tagung in Mikulčice im Mai 2011 vorgetragen wurden. Wie schon die voraufgegangenen ITM-Kolloquien so war auch diese Tagung einem ausgewählten aktuellen Aspekt der mitteleuropäischen Frühgeschichtsforschung gewidmet, und zwar dem Thema der Bewaffnung und Reiterausrüstung. Damit wurde ein breites Spektrum von Fragen behandelt, beginnend mit Typologie, Chronologie und Technologie einzelner Sorten von Artefakten über allgemeine Probleme der frühmittelalterlichen Bewaffnung und Reiterausrüstung bis hin zum archäologischen Experiment. Der gegebene Themenkreis wird im Buch nicht nur aus Sicht der Archäologie, sondern auch der historischen Wissenschaft erörtert, und zwar mit einer beträchtlichen Gelehrsamkeit und dem Streben nach einer komplexen oder analytischen Darstellung. Die vorliegenden 25 auf ganz unterschiedlichen Quellenbeständen fußenden, oft innovativen Beiträge von Forschern aus Polen, der Slowakei, Tschechien, Ungarn, Kroatien, Österreich und Deutschland bieten ein kompaktes Bild der Bewaffnung und Reiterausstattung der Westslawen und Teilen der Südslawen, aber auch der Awaren und Ungarn vor dem Hintergrund der gesellschaftlichen, kulturellen und politischen Entwicklung Ostmittelosteuropas in den letzten drei Jahrhunderten des ersten Jahrtausends.

Leider erscheint die Sammelschrift mit beträchtlicher Verspätung, wofür wir die Autoren und Leser gleichermaßen um Entschuldigung bitten. Hauptursache der Verzögerung waren die nach dem tragischen Brand der Arbeitsstätte in Mikulčice 2007 zu bewältigenden Aufgaben: die Errichtung und Inbetriebnahme der neuen archäologischen Basis Mikulčice-Trapíkov und die parallel hierzu gebotenen Sicherungsarbeiten an dem umfangreichen, durch den Brand beschädigten Fundmaterial von der Fundstelle Mikulčice-Valy, das nach und nach konservatorisch behandelt und identifiziert werden musste.

Trotz der Verspätung erlauben wir uns, der wissenschaftlichen Fachwelt diesen Konferenzband zu unterbreiten, in der Überzeugung, dass alle Beiträge ihre Relevanz und Aktualität behalten haben. Mögen sie als nützliches Hilfsmittel und Studienmaterial für weitere Forschungen auf dem betreffenden Fachgebiet dienen! Ergänzt sei, dass die letzten Autorenkorrekturen der meisten Beiträge im Jahre 2016 erfolgten und der Inhalt seither nicht mehr aktualisiert wurde.

Es ist uns eine angenehme Pflicht, uns bei allen Autoren der in der Sammelschrift präsentierten Beiträge sowie bei dem Kollektiv der Mitarbeiter, die sich an der Vorbereitung dieses Bandes beteiligten, recht herzlich zu bedanken. Für Übersetzungen und sprachliche Korrekturen sind wir Frau Pavla Seitlová und Frau Tereza Bartošková und sowie den Herren Torsten Kempke und Paul Maddocks verbunden. Für Redaktionsarbeiten gebührt unser Dank Herrn Petr Luňák und Frau Zdeňka Pavková, die auch den Satz des Buches übernahm.

Das Buch erscheint in einem Jahr, in dem das Archäologische Institut der Akademie der Wissenschaften der Tschechischen Republik des 100. Gründungstags seines Vorgängers, des Staatlichen Archäologischen Instituts, gedenkt, der ersten professionellen archäologisch-wissenschaftlichen Arbeitsstätte in der damals eben erst gegründeten Tschechoslowakei.

Erscheinen konnte die Publikation dank der finanziellen Förderung seitens des Editionsrats der Akademie der Wissenschaften der Tschechischen Republik, dem dafür unser Dank gilt.

Lumír Poláček – Pavel Kouřil

Lumír Poláček – Pavel Kouřil (Hrsg.), Bewaffnung und Reiterausrüstung des 8. bis 10. Jahrhunderts in Mitteleuropa
Internationale Tagungen in Mikulčice IX, Brno 2019, 359–371

A Carolingian-Period Winged Lance from Lake Längsee in Carinthia/Austria

Stefan Eichert – Mathias Mehofer

A Carolingian-Period Winged Lance from Lake Längsee in Carinthia/Austria. *The lance from Lake Längsee is a developed form of a Carolingian winged lance from the second half of the 8th century. Its state of preservation is extraordinarily good. Its construction is of very high quality and it is considered to have been a high-tech war weapon. From a visual and aesthetic point of view it is also very impressive. Since no indications of what it was used for have survived, one can speculate it functioned as a banner lance; it can also be considered some kind of status symbol or piece of military and political insignia. It was discovered underwater in a lake. This may have been the result of accidental loss; that it was deposited intentionally also seems probable, for example in connection with a hypothetical pagan sanctuary on the shore. Reconstruction of the medieval environment of the lake points to a power structure already in existence in the 8th century. The lance is the first object of this type to be found on the territory where the Slavic principality of Carantania was located. It fits perfectly into what we currently know about how the Carantanians armed themselves, using a combination of western (Frankish) weapons and eastern (Avarian or Byzantine) belts.*

Keywords: Carolingian winged lance – Carinthia – archaeometallurgy

1. Introduction and Acknowledgement

The winged lance presented in this paper is the first object of its type to be found in the Austrian part of the south-eastern Alps. It comes from the territory where the early medieval Slavic principality of Carantania can be located. It was discovered around 1987 in Lake Längsee (Sankt Veit district, a municipality of St Georgen am Längsee, Fig. 1) underwater a short distance from the western shore. Today the object is privately owned and displayed in the Karolingermuseum Moosburg on permanent loan (Eichert 2009). Its find spot in a lake, as well as its extraordinarily good state of preservation, are most remarkable.

Along with the archaeological and historical background, archaeometallurgy was also employed to determine its technological classification. The results presented here are an updated version of an article published in Archäologisches Korrespondenzblatt in German in 2011 (Eichert/Mehofer/Baier 2011).

The authors wish to thank Dr. Robert Svetina from the Karolingermuseum Museum in Moosburg for the opportunity to investigate this object as well as for financial support. Further acknowledgement goes to Univ.-Doz. Dr. Paul Gleirscher (Landesmuseum Kärnten), Ao. Univ.-Prof. Dr. Erik Szameit, Gabriele Gattinger, Mag. Rober Baier and Rudolf Braun (Institut für Ur- und Frühgeschichte, University of Vienna). This investigation's results were also included into the project "Eastern Alps Revisited" funded by the Austrian Science Fund (FWF), P.Nr. P24045

2. The Lance

The lance extends in total 52 cm from top to bottom. The upper part is leaf-shaped, 39.5 cm long and 6.5 cm at its broadest. The lower part consists of a 12.5 cm long socket for a wooden shaft. On the socket there are two lateral wings with a maximum deviation of 9 cm.

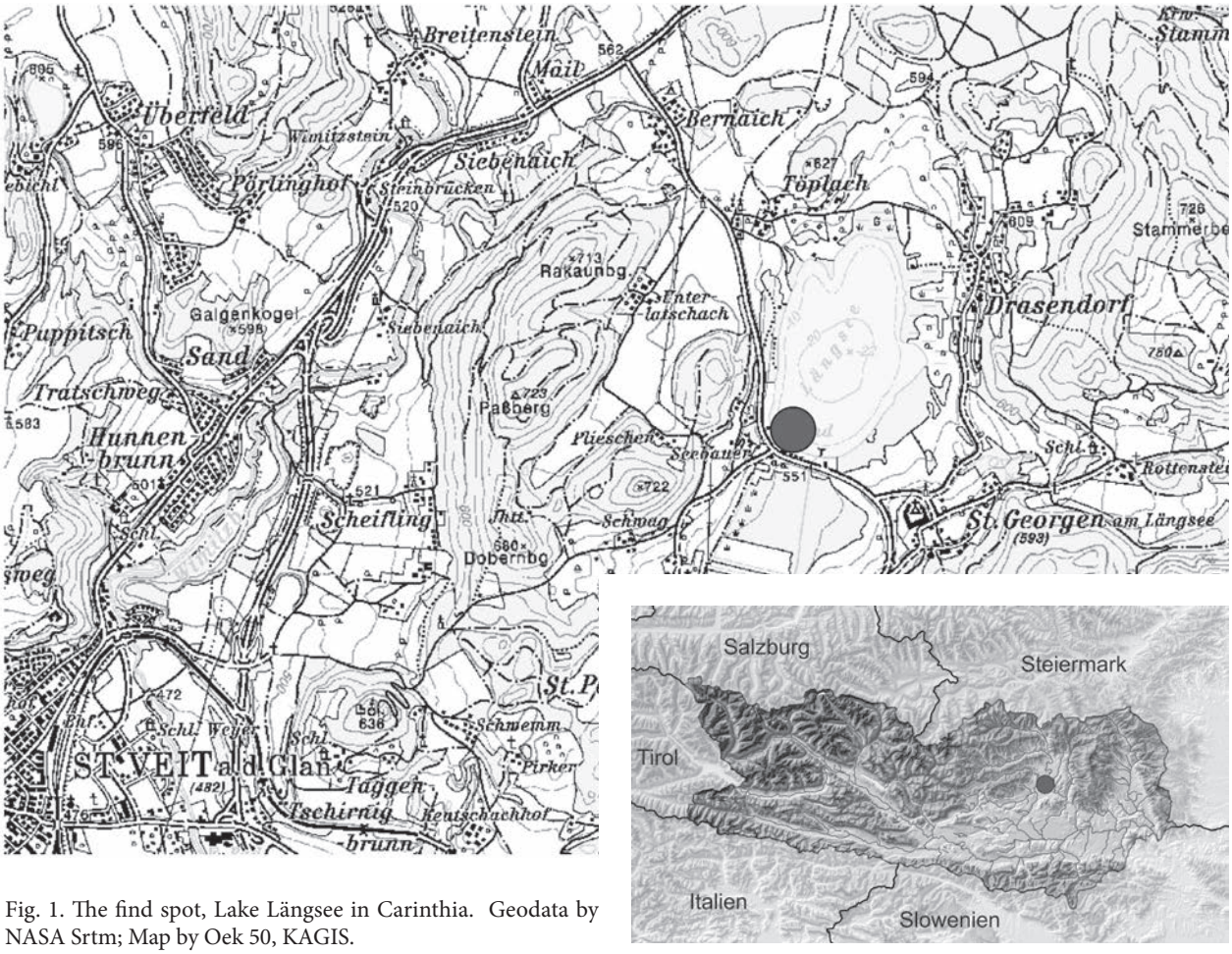


Fig. 1. The find spot, Lake Längsee in Carinthia. Geodata by NASA Srtm; Map by Oek 50, KAGIS.

The leaf-shaped upper part has a rhombic cross-section and its centre is 0.9 cm thick. From the top to the socket it shows a very slight ridge. The central area of the lance is decorated with pattern-welded inlays. The lateral blades are welded separately onto the central core. The cutting edges are again welded separately onto the lateral blades and have been artificially hardened.

The socket's cross-section is circular and its diameter decreases from bottom to top from 3.2 to 2 cm. In the lower area there are two lateral nail holes for the fixing of a wooden shaft. The decoration on the front as well as on the back section consists in each case of two closed channels with a single channel inside them. The lateral sections are again decorated by channels in the form of an elongated 'W' with an elongated and inverted 'V' reaching inside it. The wings are welded onto the socket and also decorated with several channels on the front and the back.

Aside from some minimal damage, what is caused by corrosion, the lance is extraordinarily well preserved. It shows a very dark patina, probably generated due to deposition underwater or in mud in an anoxic environment. There are no traces of usage or of combat.

This find from Lake Längsee is one of the best-preserved winged lances from the Carolingian period (Fig. 2, 3, 4).

3. Archaeometallurgical analysis

Today archaeometallurgical analyses of early medieval weaponry can draw on a long-established research tradition.[1] Already used extensively during the last century, such archaeometallurgical analyses provide insight into the production technology of an object on the one hand, and into the history of its use on the other. The main focus is placed not just on a metallurgical description of the raw materials, the manufacturing techniques, toolmarks and the subsequent working of the artefact, but also on analysing its construction. The visual appearance of a weapon is not only determined by various morphological criteria, which are subject

1 See e.g. Tylecote/Gilmour 1986; Westphal 2002; Pleiner 2006; Mäder 2007 for an overview and further references. There is a large number of publications on this topic. A complete listing of them would go far beyond the scope of this paper.

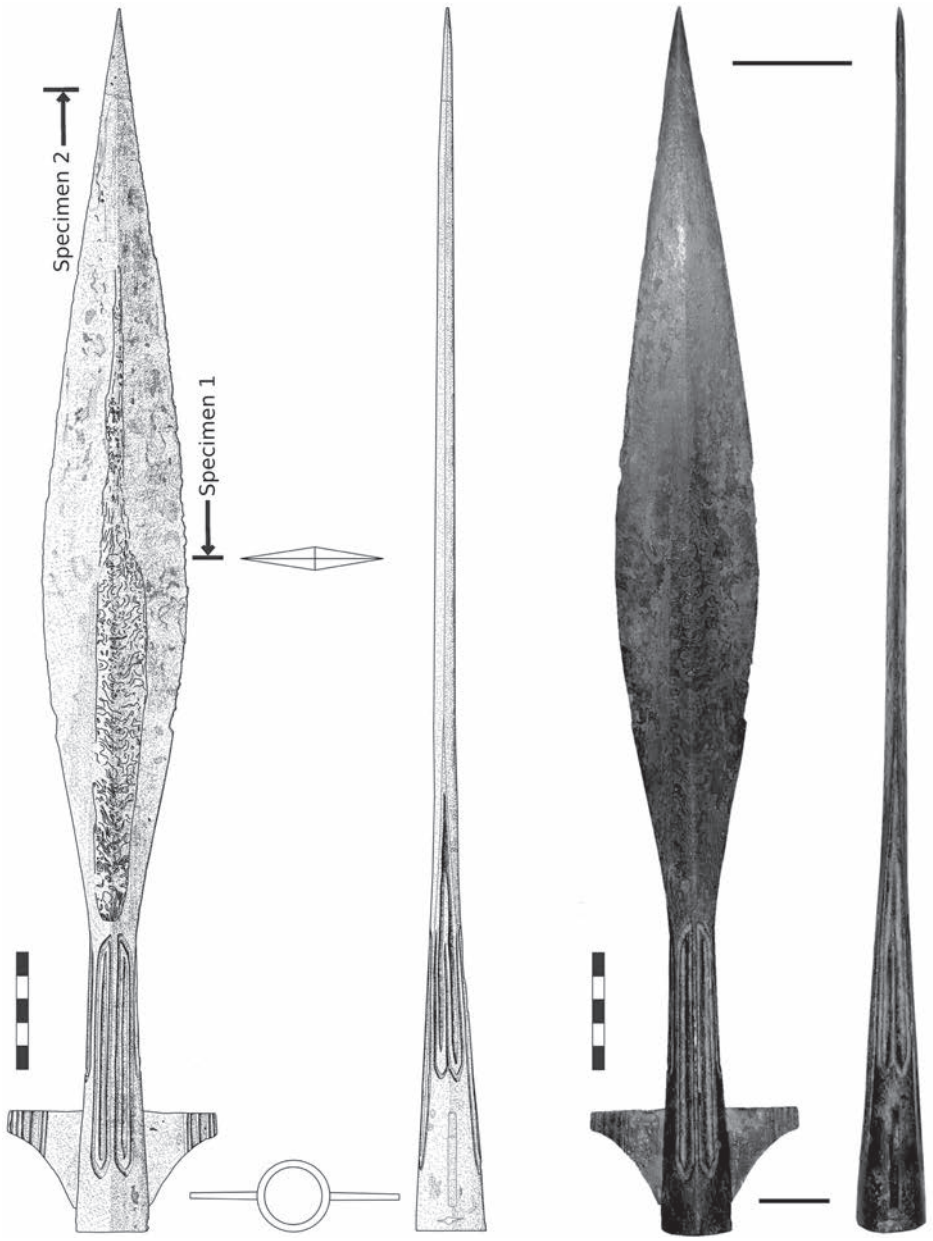


Fig. 2. The lance. Photo and drawing by St. Eichert.

to particular trends, but also quite fundamentally by its intended use.[2] One would wholeheartedly agree with Herbert Westphal's argument that the effort put into the manufacture of a weapon can be explained by the fact that its owner's life may depend on its quality (Westphal 2002, 3). The producer of a weapon will therefore always strive to use the best materials and techniques known to him (Jung/Moschos/Mehofer 2008; Eichert/Mehofer/Baier 2011, Note 4). These techno-typological criteria can only be identified by means of metallurgical analyses and provide additional information for the archaeological classification of an artefact within a particular cultural-historical context. As a consequence, the development of offensive and

2 The shape of the blade of a lance or the construction of the blade of a sword essentially determine their possible uses. If, for instance, the balance point of a sword is located close to the hilt, it is more suitable for light and quick movements, as for example for stabbing; if it is located further towards the tip of the sword, on the other hand, the weapon will be more suitable for cutting or slashing. Determining the location of the balance point therefore allows us to classify the construction principle of a sword and thus its main use by attributing a numeric parameter, which in turn can be shown in a diagram. This method has been applied for a long time in modern fencing and is one of several methods used to determine the usability and classification of a sword. It can, of course, also be used in the analysis of swords from other periods, thus allowing us to illustrate trends in technological development, for instance, by assessing Late Bronze Age swords. Osgood 1998, 101–112; Mehofer 2003; Jung/Moschos/Mehofer 2008.

Fig. 3. Detail of the pattern-welded centre. Photo by G. Gattinger.

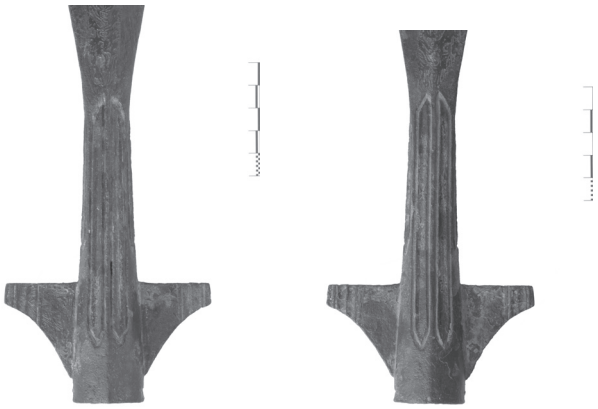


Fig. 4. Detail of the socket and wings. Photo by G. Gattinger.

defensive weapons can only be understood as a process of mutual influence and stimulus.

From an archaeometallurgical viewpoint, several contributions have been made with regard to finds from the Austrian region over the past number of years and decades. Within a research project[3] carried out during the years 2001–2003, various weapons that were found in a region circumscribed by the eastern boundary of the Merovingian and Carolingian cultural spheres and the western part of the Avar and (later) Hungarian realms of power were examined. The aim was to study various aspects regarding the development of weapons technology and to gain insight into the Early and High Medieval forging techniques used in the Austrian region. Erik Szameit had been studying Carolingian-period swords and lances as early as the 1980s; however, he used X-ray analyses alone (Szameit 1986; 1987). While such analyses can provide detailed insight into the constructional aspects of an object, no statements can be made regarding the quality of the materials or the manufacture. These, however, are all crucial aspects that determine the serviceability of a weapon.

The introduction of western-style weapons into the Avar and Carantanian schema of weaponry shows that local weapons and combat techniques were influenced by and eventually adapted to the Carolingian repertoire due to on-going conflicts and even peaceful contacts within this border region.[4] Numerous weapons of Frankish type found outside the Carolingian Empire[5] attest to frequent exchanges of such "everyday items". A capitulary issued by Charlemagne in Diedenhofen in AD 805 expressly forbids traders from travelling eastwards to the territories of the Avars and Slavs with the aim of selling offensive and defensive weapons (Capit. reg. Franc. I, Capit. 1, Nr. 44, c. 7, 123). These observations allow us to raise questions concerning the intensity of the exchange of goods, the weapons trade and also potential technological transfer between the regions mentioned.

Besides spathae, saxes and lances from various eastern Austrian cemeteries and other sites, a number of weapons including four saxes (Daim 1998, 108–109, 122 Taf. 8:1; 125 Taf. 11:1; 128 Taf. 14:1; 121 Taf. 17:1; Szameit/Stadler 1993, 219) and several sabres came to light in some of the 798 burials in Zillingtal (Daim 1996, 417–423), the largest Avar-period cemetery in Austria. Based on typological criteria, the site director Falko Daim assumed that these single-edged slashing swords were western imports. Metallographic analysis verified this assumption for one of the four saxes

3 Within an archaeometallurgical research project, funded by the Austrian National Bank (project title "Metallographische Untersuchungen an Schutz- und Angriffswaffen des Mittelalters", Nr. 9394) numerous weapons dating to the Early Middle Ages were examined. We would like to thank Ao. Univ. Prof. Dr. Erik Szameit for his kind assistance. Szameit/Mehofer 2002; Mehofer/Leusch/Bühler 2005; Mehofer 2006; 2007.

4 This phenomenon can not only be described for early medieval weaponry but also for clothing accessories: Szameit/Stadler 1993, 221 f; Szameit 1994a; 1994b; Kiss 1996, 232; Daim 1998, 98; Mehofer 2003; Stadler 2005; Breibert 2005; Nowotny 2007, 210–218; Breibert 2008, 9; Hausmair 2008, 114, 164; Eichert 2010, 121–126, 276 Taf. 2, 291 Taf. 17.

5 Menghin 1980, 227; Müller-Wille 1982, 101; Szameit 1986, 385; Szameit 1987, 155; Szameit 1992, 215; Vinski 1983, 465; Brather 1996, 48.

because, in terms of its construction details, it can be likened to other Frankish weapons that have been studied. As part of the above-mentioned research project a small series of typologically "western" weapons from Avar and Carantanian contexts were also examined, and the results of these analyses are yet to be published. This article presents the results of the separate metallurgical analysis carried out on the winged lance from Lake Längsee in Carinthia, which can also be associated with the phenomenon described above. First it was X-rayed and then the surface documented. The next step was to take two samples in order to determine the technical structure and the quality of the material.

4. Metallographic examination

4.1. Specimen 1

State of preservation

The winged lance was completely preserved and showed no heavy traces of use or corrosion damage.

Sampling

A sample was taken from the centre of the blade (Fig. 2). In order to maintain the cohesion of the material, the sample was taken as far as the assumed central line of the blade and a polished cross-section was prepared.

Description of slag inclusions

Most of the material used was poor in slag. Only the core material bore irregular slag lines just above the horizontal curved welding line.

Microstructure

The pattern-welded parts of the sample consisted of several layers of metal with different alloy content and hardnesses; they were identified as alternating layers of coarse-grained ferrite and fine-grained ferritic-pearlitic layers (Fig. 5). The microstructure of the core material consisted mainly of ferrite with pearlite inclusions and some small areas with pearlite concentrations; the distribution of carbon was irregular. The highest concentrations of carbon in the core material of the blade were

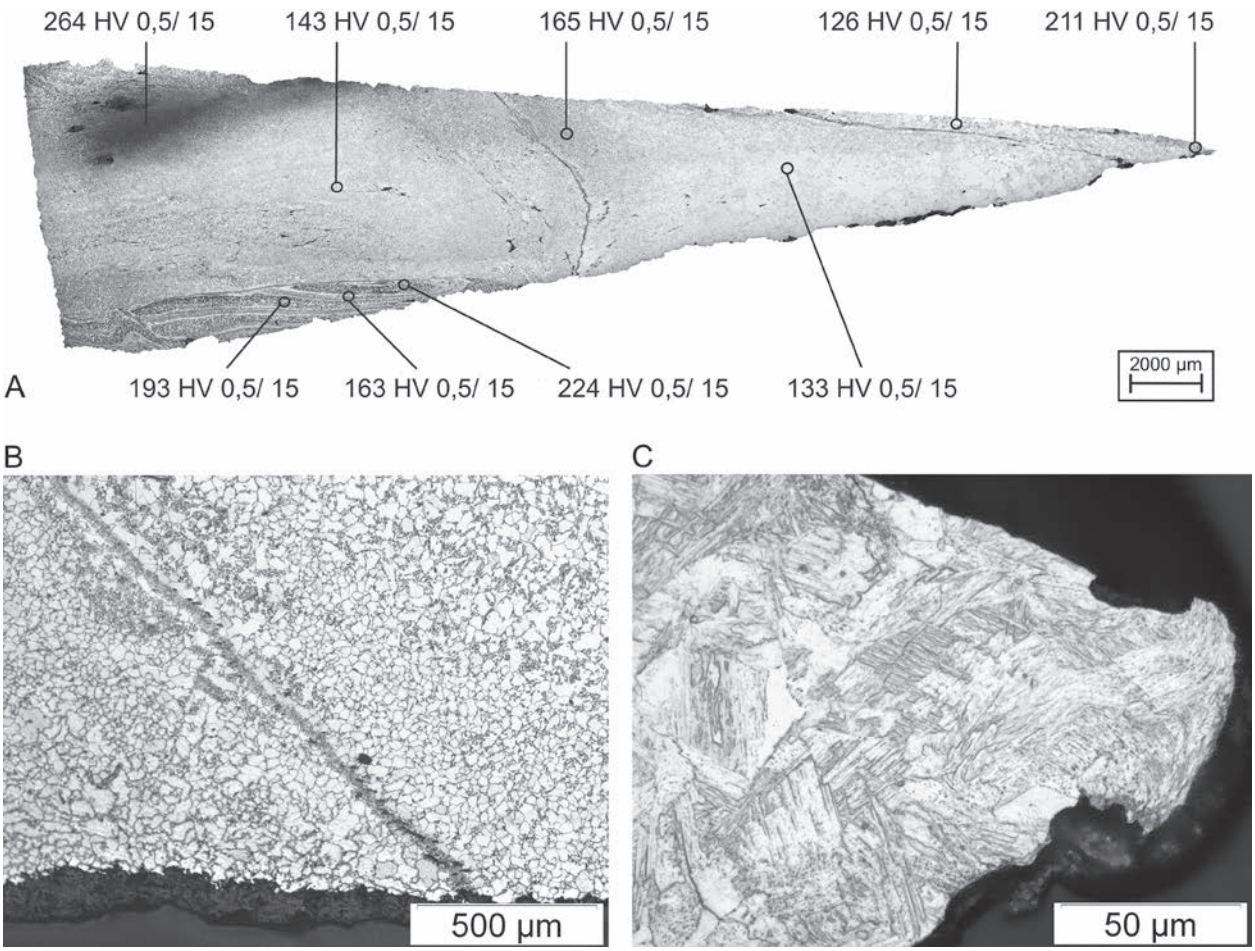


Fig. 5. Specimen 1: A – distribution of iron carbides in the metal and results of hardness testing; B – micrograph showing the ferritic-pearlitic core material (right), which was welded on the intermediate layer (left); – C quench-hardened microstructure at the cutting edge. Photos by M. Mehofer, R. Baier, VIAS.

identified just beneath the pattern-welded layers and steadily decreased towards the centre. The low-carbon intermediate layer welded onto the core material of the winged lance consisted mainly of a ferritic microstructure with various grain sizes. A limited area directly underneath the welding line was different in that it was composed of ferrite with pearlite inclusions. The grain sizes in the intermediate layer increased towards the attached cutting edge, to which it was joined by means of another carburised welding line. The low-carbon cutting edge material contained ferrite as well as bainitic areas.

4.2. Specimen 2

Sampling

The second sample was taken near the tip of the spearhead (Fig. 2). In order to maintain the cohesion of the material, the sample was taken as far as the assumed central line of the blade.

Microstructure

The sample could be divided macroscopically into two zones (Fig. 6). One zone was composed mainly of ferrite and the other consisted mostly of ferrite with pearlite at the grain boundaries. The cutting edge also bore a slightly hardened microstructure.

5. Conclusion

The winged lance was made by using inhomogeneous material of varying carbon content. Two pattern-welded layers 1–2 mm in thickness (in the present state of preservation) were identified; these had been welded onto the surfaces of the core material. A further intermediate layer was welded onto the core material, to which the separately manufactured cutting edge was attached.

The metallographic section showed that the cutting edge, whose metal exhibits low-carbon content, was welded onto the intermediate layer. However, due to the fact that this metal did not contain sufficient amounts of carbon, quenching did not achieve the desired degree of hardness. Measurements in the area of the cutting edge itself only resulted in a value of 211 HV 0.5/15, which corresponds to approximately one quarter of the maximum hardness of martensite. One must take into account, however, that metallographic analysis results, strictly speaking, only refer to the area of the sample itself. Given the potentially inhomogeneous distribution of the carbon within the metal, there can be significant variation even within small areas (e.g. shown by Herdits 2000) so that much higher values may have been achieved some centimetres further along the object. The hardened microstructure observed does indeed suggest that the manufacturer of the lance quenched the metal with the intention of improving its hardness and serviceability. The composite construction of the lance – consisting of a core, separate cutting edges and pattern-welded material – generally points to a highly skilled craftsman. In addition, the quenching of the cutting edges indicates that the lance was intended and suitable for actual use.

A comparison with other metallographically-analysed Carolingian-period weapons from the Austrian region such as the winged lances from Hainbuch near Amstetten/Lower Austria and Schwanenstadt/Upper Austria (Szameit 1987, 158, 160 Fig. 3), an early medieval spatha from Hohenberg/Styria (Mehofer 2007) and a sax from Grabelsdorf/Carinthia (Szameit/Stadler 1993) revealed certain constructional similarities. The weapons examined were all composite constructions and their cutting edges had been quenched, which suggests that the craftsmen were highly skilled. However, the quality of the material used to make the artefacts examined and the hardness of their cutting edges was quite poor because they did not contain sufficient amounts of carbon. Further analyses are required, however, to ascertain whether it was just the original material used to make the individual artefacts that was too inhomogeneous, or whether it is indicative of a systemic lack of access to high-quality carbonised steel for their manufacture. This also raises the question whether the weapons examined were produced locally or whether they should be identified as imports[6] from the Carolingian Empire, as suggested by Szameit and Stadler (1993, 226) for the Grabelsdorf sax mentioned above. Although these questions have already been widely discussed, there is still a lack of comprehensive and detailed metallurgical analyses which would allow us to identify traces of manufacture in the originals, which would point to certain centres of production, distribution circles and trade relations,[7] thus allowing us to distinguish between the originals and their local imitations. These questions hold great importance for future research in this field, since it has not yet been possible to localise centres of early historical iron working and to explain to any satisfactory degree the associated problems with the distribution of their products. The exchange mechanisms between the Frankish core area and peripheral zones will remain the subject of further research.

6 E. Szameit considers that several saxes from western part of the Avar Empire can be categorised by typological criteria as having been locally produced (Szameit/Stadler 1993, 219).

7 Heiko Steuer postulates that over 120,000 "ULFBERHT" swords were produced and traded. Steuer 1999, 408.

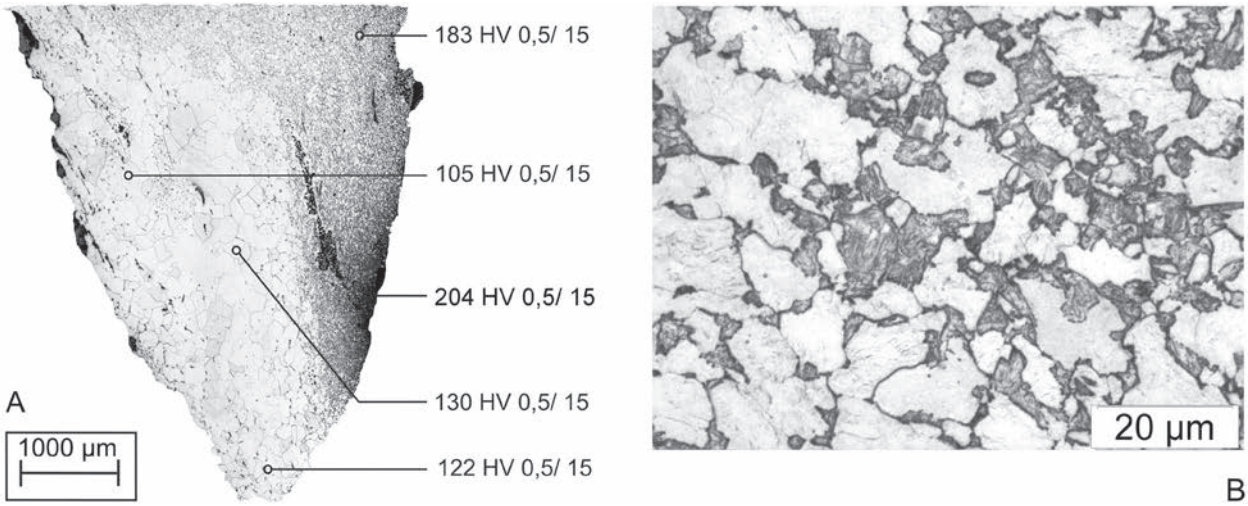


Fig. 6. Specimen 2: A – illustration of inhomogeneous distribution of carbon in the sample; B – micrograph showing quenched microstructure near the surface of the specimen. Photos by M. Mehofer, R. Baier, VIAS.

5.1. Classification and dating

Spears or lances with winged appendices can be found from the late Roman and Migration periods until the early modern age. At first they were primarily used as hunting weapons. In the Carolingian era developed forms of winged lances represent an important part of Frankish arms. In the 8th and 9th centuries they can be found widespread throughout Europe (Szameit 2005, 154). In the core area of the Carolingian Empire they are more scarce and usually found in settlements or as stray finds. Due to different burial rites such objects are more commonly found in the peripheral regions of the empire where they are still part of grave furnishings (Westphal 2002, 257).

The lance from Längsee exactly represents a developed lance of Type II in the classification of H. Westphal (Westphal 2002, 257, Fig. 6). The characteristics of this type are a leaf-shaped, elongated upper part with the widest point in the centre, a round or sometimes octagonal cross-section of the socket, mostly decorated with channels as well as winged appendices also decorated with channels. Many examples show pattern-welded decorations in the core area of the leaf too. Most known examples are dated to between the second half of the 8th and the first third of the 9th century (e.g. Westphal 2002, 297, Tab. 3:4.d; Szameit 1987, 167–170).

There has been, and continues to be, some debate in the scientific community about what these lances were used for, throwing up more and more possibilities. With certainty they were used as weapons (Steuer 1995). In this context winged lances can be found with equestrian warriors as well as with foot soldiers. In the "Psalterium Aureum", a miniature painting from the St Gallen 9th century from, both military branches are drawn equipped with winged lances (Psalterium aureum, St Gallen, Stiftsbibliothek, Cod. Sang. 22, Pag. 141).

The wings' functions have also been discussed with a broad variety of suggested possible usages (for an overview: Szameit 2005, 156–160). Explanations range from "stoppers" which are supposed to avoid too deep penetration into the enemy's body to "carriers" for the warrior's arms and luggage. In a military context the wings most probably served as a protection to parry an enemy's blow. Perhaps they were also used to fix the lance with straps onto the wooden shaft; it is also possible that these lances carried some kind of flag or pennant, attached to the wings (Szameit 2005, 160–162) and that they were thus used as banner-lances.

The geographical distribution of winged lances stretches nearly all over continental Europe. They are known from the territory of the Carolingian Empire (Westphal 2002), from areas settled by Slavs in eastern (Kouřil 2005, 69–73) and southern (recently e.g.: Sekelj Ivančan 2007) Europe as well as from the (former) Avar Khaganate (Stadler 2005, Verbreitung der archäologischen Typen, DVD-Attachement, Type Lanze 00280).

Austrian examples were only known from outside the Alpine region. A lance from Dornach in Steyr, Oberösterreich shows very similar dimensions and has a pattern-welded decoration on its leaf too (Szameit 1987, 156, 159, Fig. 2.1). From Traun (Oberösterreich) comes another lance with similar proportions and again pattern-welded decoration. In its socket's and wings' decorative grooves inlays of copper or copper alloys are still preserved (Szameit 1987, 158, 159, Fig. 2.2). In Hainbuch (Amstetten/Niederösterreich) a comparable lance was found in a grave combined with

an early Carolingian spatha (Szameit 1987, 158, 160, Fig. 3.1). Another remarkable example is the famous "Spear of Destiny" or "Holy Lance" from the Vienna Imperial Treasury museum. It derives originally from a Carolingian winged lance of the 8th century (Szameit 2005, 164–165, Fig. 1).

Regarding the lance from Lake Längsee, the following conclusions can be drawn: it is a developed Carolingian lance with winged appendices of type II after Westphal/Szameit. It can most probably be dated to the second half of the 8th century. From a technological point of view it must be stated that it is the result of an extraordinarily high quality process. Also visually and from an aesthetic viewpoint it can be classed as a top-notch product. It was designed as a high-tech war-weapon. The missing traces of military use could also indicate usage as a banner-lance.

5.2. Remarks on the place of discovery

In Europe lances are often found underwater (Wegener 1995). In Austria too some Carolingian lances have been discovered in rivers (e.g. in Schwanenstadt: see Szameit 1987, 158). The one from Lake Längsee, however, is the first example to come from standing water. As with finds from rivers, one can either think of intentional or accidental deposition. There is a theoretical chance that the object ended up lost during human activity at the lake – e.g. crossing the lake or hostilities on the shore. Also floodwaters may have caused the lance's displacement without human influence.

Concerning intentional deposition, we have to ask for possible motives. Unfortunately neither the exact circumstances of the recovery nor the definite find spot and its environment are known. That is why the following remarks are to be seen as hypothetical.

On one hand the lance could have been deposited for conventional reasons, for instance because it had become obsolete. On the other hand such deposits in waters or swamps are often interpreted within sacral circumstances. In this case the lance may have been put into the lake in some sacrificial ritual (Wegener 1995,§6).

Waters are often connected with pagan Slavic cults. The goddess Mokoš for instance is mostly seen in this context (Pleterski 2004). In Slovenia on the island in Lake Bled, Andrej Pleterski notes there was a Mokoš sanctuary which was replaced by a Church of St Mary during or after Christianisation (Pleterski 1986).

Also from Carinthia there is evidence for pagan Slavic sanctuaries near water or on the shore: the tradition of Domitian of Millstatt, whose tombstone is partly preserved tells us about pagan stone idols on the lakeshore that are destroyed by the newly-converted Dux Domitian. In the place of the pagan temple he builds a Christian church (see Kahl 1999, with further bibliography). This legend indicates there was a pagan sanctuary on the shore of Lake Millstatt.

Another hint for similar structures comes from Bamberg in Bavaria. Near this city the so-called "Bamberger Götzen" have been found – in connection with water. They are interpreted as pagan and Slavic stone idols with a close relationship to the cults of mounted nomads (Losert 2009, 253–255; contrary: Haberstroh 2002). It seems possible that a similar sanctuary may also have existed at Lake Längsee and that the lance was deposited in the water in a religious context. There are certain – and of course unverified – rumours about other "old" objects found by divers in the relevant area, which could strengthen this hypothesis.

Another theoretical explanation would be to see the lance as a grave good of a burial in the lake's waters.

Needless to say, these recent explanations are to be understood as hypothetical. An exact clarification of the lance's history of deposition and of the underlying motives will also hardly be possible in future without further finds and extensive underwater investigations.

5.3. The find spot's historical and archaeological environment

Lake Längsee is situated in a basin surrounded by ridges up to 800 m high, approximately 5 km west of the regional capital Sankt Veit.

Aside from the lance, three dugouts are also known from the lake – one of them from the Early Middle Ages.[8] In the surrounding area, within a radius of 10 km, there are also some early medieval cemeteries. Three of them (Reipersdorf 2, Baardorf and Puppitsch-Obermühlbach) can be dated to the 8th century. For five other ones (Reipersdorf 1, Baiersdorf, Stammersdorf, Bruckendorf and Hochosterwitz) a similar dating seems probable (Eichert 2010).

On the surrounding ridges there are four hilltop settlements and fortifications (Untermühlbach, Dobernberg, Steinbrückenplatte, Otwinskogel). They are known because of their still-preserved ramparts (Kohla 1973, 35, 307, 235). They have not been excavated and their dating is unclear. However, early medieval usage is likely.

In the Early Middle Ages the area was known as "Astaruuiza" (today in the form Osterwitz). In 860 King Louis (the German) donated a royal "Curtis" with

8 Unpublished. This dugout is currently being investigated by Michael Konrad in a Bachelors thesis at the Institut für Ur- und Frühgeschichte (University of Vienna). The authors wish to thank him kindly for the information on this object.

this name to the Bishopric of Salzburg (MGH DD LD, Nr. 102). The Church of St Peter situated next to Lake Längsee must have been founded by 927, when it is mentioned for the first time in written sources (MC III, 90). In the first years of the new millennium St George's Abbey was founded several hundred meters from the shore of the lake (Sacherer 1995; Tropper 1995).

It is obvious that the find spot of the lance lies in an area that was already relatively densely populated in the 8th century. Cemeteries require nearby settlements and the fortified hilltop settlements, in combination with the finds of weapons, indicate some kind of military and manorial infrastructure. The dugout indicates local agriculture and fishing. In the 9th- and 10th centuries written sources inform us about a royal "Curtis" and the founding of the Church of St Peter and St George's Abbey. This also points to a potent pre-existing political and manorial structure in this area by the 8th century. If the lance was used as a banner lance it might have been some kind of insignia too, located in the social environment of the noble Slavic elite based here. Furthermore, interpreting the deposit as part of some sacrificial ritual would suggest a nearby sanctuary.

All things considered, we can claim that in the 8th century Lake Längsee and its environs were an important settlement area with places of political, military and religious character (Fig. 7).

6. Remarks on how the Carantanians were armed and on the origin of the winged lance

For the lance's provenance two main explanations can be considered. On the one hand, it may come from a Frankish or Bavarian environment. It seems possible that it came to the Carantanians during armed conflicts with these forces, which were common since the 740s to the 820s (e.g. Wolfram 1995, 301–304). In this case the weapon has to be interpreted as loot or loss.

A second explanation would be to interpret the lance as a Carantanian's weapon. 8th-century burials in Carantania often contain western weapons; stray finds of Frankish armour are also known (e.g. Eichert 2010, passim). Several scramasaxes, axes, spathae, spurs and stirrups represent a certain type of armament which can be observed originally in the Merovingian-Carolingian west.

The earliest burials with weapons as grave goods are dated to the decades around 700. From the 9th century onwards, the dead were no longer buried along with weapons, which can be explained as part of the drastic change in burial customs caused by the Christianisation of the Carantanians. The disempowerment of the elite and its replacement by western nobles also led to a change in archaeological appearances.

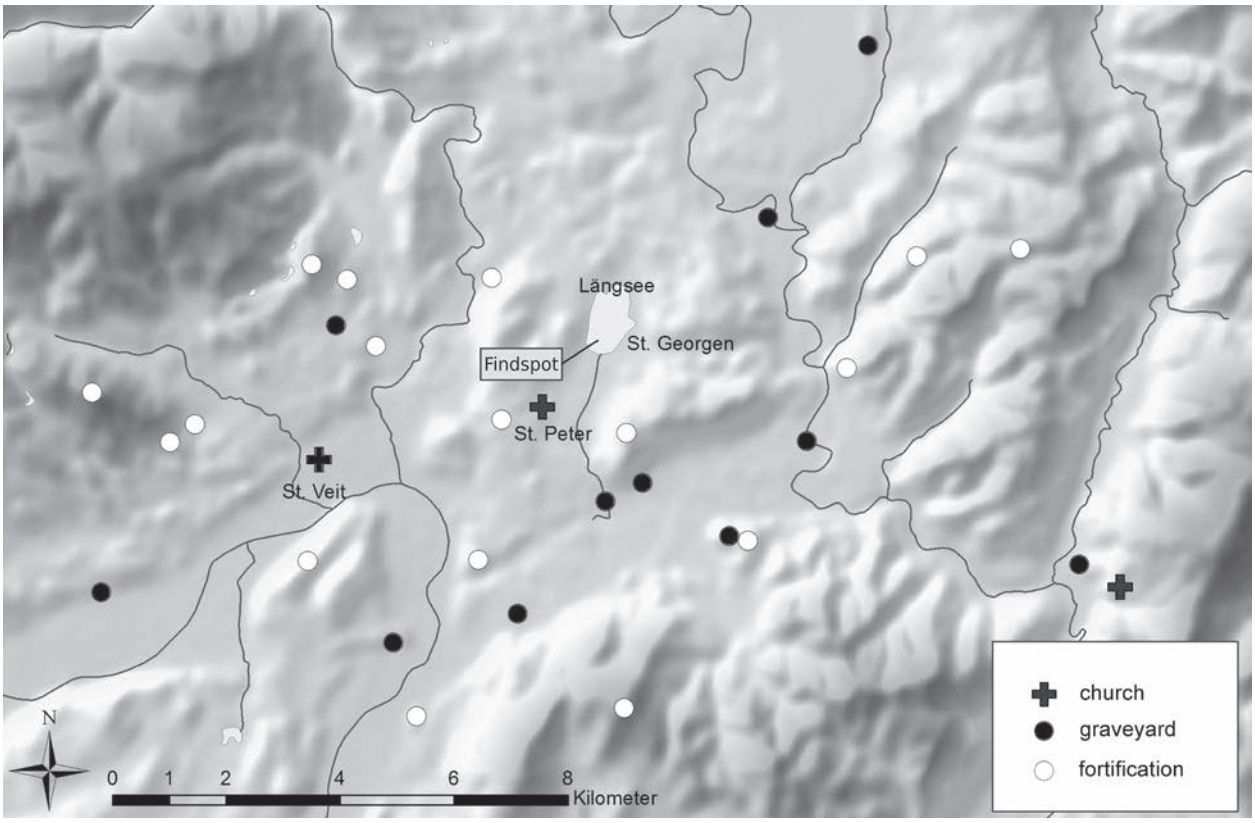


Fig. 7. The find spot and its environment in the Early Middle Ages. Map by St. Eichert, Geodata: NASA Srtm.

So it is not a surprise to find a Carolingian winged lance in Carantania. Due to the lack of archaeologically identified workshops one cannot say definitely if it was imported or produced locally. It is most probable that it was produced by a Frankish blacksmith. On the other hand, the lance shows certain characteristics that were commonly and nearly exclusively observed in eastern Alpine finds, so that local production can be considered too (see above, archaeometallurgy).

Most of the 8th century burials with weapons as grave furnishings contain another remarkable component too. The dead are equipped with Avarian or Byzantine belts (on Byzantine provenance: Daim 2000). Examples are known from Grabelsdorf and Baardorf in Carinthia (Eichert 2010, Szameit 1994a); also from Styria (Nowotny 2007, Breibert 2008) and from the Alpine regions of Upper Austria (Hausmair 2008) comparable burials are known. They are considered indicators of the territory of what was early medieval Slavic Carantania. This phenomenon is mainly found in the eastern Alpine region. Analogies from elsewhere are very scarce. One burial from Blatnica in Slovakia has to be mentioned in this context. It contains a western sword along with a winged lance (!) combined with a late Avarian gilded belt and horse harness. The dating and interpretation of the grave have been frequent subjects of controversy. In one case it is dated to the early 9th century and seen as a Slavic chieftain's burial (Wieczorek/Hinz 2000, Kat. 144–147, No. 06.01.01. a–i). At the least we can say that it does show that there is some probability that, also outside Carantania, members of the Slavic elite used this combination of eastern costume and western weapons as a means of representation.

As concluding remarks, we can say that in early medieval Carantanian society elite males used Avarian or Byzantine belts not only as fashion but as status symbols (see: Daim 2000). They are armed with scramasaxes, spathae, axes and with winged lances as well as being equipped with spurs and stirrups, all typical of the Merovingian or Carolingian western core areas (e.g. Stein 1967).

Souhrn

Karolinské kopí s křidélky od jezera Längsee v Korutanech/Rakousko. Jak bylo nedávno zjištěno, byl v letech před, resp. kolem roku 1987 v těsné blízkosti západního břehu jezera Längsee nalezen železný hrot kopí s křidélky. Nachází se v soukromých rukou a je jako trvalá zápůjčka vystaven v Karolinském muzeu Moosburg. Díky spolupráci vlastníka nálezu, Karolinského muzea Moosburg, Korutanského zemského muzea, Institutu pro pravěk a ranou dobu dějinnou při Vídeňské univerzitě a institutu VIAS (Vienna Institute for Archaeological Science) mohlo být kopí v roce 2009 interdisciplinárně prozkoumáno.

Kopí bylo nejprve kresebně, fotograficky a fotometricky zdokumentováno. Po rentgenovém průzkumu následovala archeometalografická, resp. archeometalurgická analýza, která měla ukázat kovářské zpracování a kvalitu použitého materiálu. Typologické a chronologické vyhodnocení přineslo v kombinaci s přírodovědeckými výzkumnými metodami zajímavé výsledky, které chceme v následujícím textu stručně představit.

Jedná se o kvalitně vypracované kopí s křidélky z 2. poloviny 8. století. Až na minimální poškození korozí na ostří je kopí výjimečně dobře zachovalé. Je pokryto velmi tmavou patinou, způsobenou pravděpodobně uložením ve vodě, resp. bahně. Stopy užívání, resp. boje nejsou znatelné. Kopí je velmi pečlivě vykováno a složeno z několika částí. List je tvořen jádrem se separátně přivařenými čepelemi, na které je vždy navařeno speciálně zpevněné ostří. Jádro je na obou stranách pokryto vrstevnatým damaskem. Křidélka jsou rovněž navařena. Stejně jako tulejka jsou zdobena četnými rýhami, které zřejmě původně obsahovaly zlaté nebo stříbrné vložky. Nález z jezera Längsee představuje v celosvětovém měřítku jedno z nejcennějších a současně nejlépe zachovaných kopí z karolinské doby.

Podobná kopí s křidélkovitými výstupky na tulejce se vyskytují od pozdní antiky, resp. doby stěhování národů až do raného novověku. Zpočátku se používala v prvé řadě jako lovecká kopí a v rozvinuté formě pak tvořila v karolinské době důležitou součást franské výzbroje. Největšího rozšíření dosáhla v 8. a 9. století. V centru karolinského území se vyskytují kvůli různým zvykům v oblasti milodarů spíše jako ojedinělé nálezy, zatímco na periférii, např. v Rakousku, se pokročilé formy objevují v hrobech často.

Světově nejznámější zástupce kopí s křidélky je Sancta Lancea, Svaté kopí, které je uchováváno a vystaveno ve vídeňské Schatzkammer.

Pokud jde o funkci kopí s křidélky, diskutovalo se a stále se diskutuje o několika možných variantách. Nepochybné – ikonograficky doložené – je použití jako válečná zbraň. Zde se kopí s křidélky objevuje stejně u pěšáků jako u jezdců. Podle dobových vyobrazení mohla kopí s křidélky fungovat jako vlajková kopí, a tudíž jako panovnické insignie.

Kopí s křidélky jsou známa téměř z celého Karlovci ovládaného území Evropy, ale i ze Slovany osídlených oblastí východní a jižní střední Evropy, jakož i z oblasti (tehdy) avarské. Pro Karantanii není výskyt takového předmětu žádným překvapením. Místní zbraně se

v 8. století zhotovovaly podle franských vzorů, a tak se v Korutanech vyskytují saxy, meče, sekery, třmeny a ostruhy, jaké jsou známy v podobě typických prvků v sousedním Bavorsku.

Kopí z jezera Längsee má ale pozoruhodné nálezové okolnosti. Mnoho nálezů zbraní pochází sice z tekoucích vod, nález v jezeře je ale doposud velkou vzácností. Lze sice uvažovat o náhodné ztrátě, např. při boji na břehu, všeobecně se ale jako pravděpodobné jeví v tomto případě i úmyslné uložení. Z různých zdrojů víme, že vodstva hrála ve slovanském pohanském kultu velkou roli. Máme na mysli např. sochy pohanských model na břehu jezera Millstättersee, o nichž se vypráví v legendě o sv. Domitianovi, jež tento obrácený pohan utopil v jezeře, aby udělaly místo křesťanskému kostelu. Také v případě Längsee lze diskutovat o tom, zda kopí s křidélky se do vody nedostalo jako zásvětná oběť či obětní dar v souvislosti se slovanskou svatyní. Že toto jezero hrálo v karantánském raném středověku významnou roli, dokládá i jeden nedávno vyzvednutý člun z kmene stromu, který byl rovněž datován do 7./8. století. Řada pohřebišť, výšinných opevnění a kostelů z doby až kolem přelomu tisíciletí dokládá rané osídlení dotyčné oblasti a podtrhuje velký význam „Astaruuizy“ v raném středověku.

Celkově máme u kopí s křidélky z jezera Längsee co do činění se skutečnou „hightech-zbraní“ z 8. století, která snese srovnání s nejdokonalejšími představiteli svého druhu. Pochází z prostředí ozbrojených jízdních válečníků 8. století a jistě patřilo příslušníku elity. Jeho nálezové okolnosti odkazují na předpokládanou pohanskou svatyni u jezera Längsee a ve spojení s jinými raně středověkými artefakty z dané oblasti svědčí o vládnoucí struktuře, která v písemných pramenech z 9. a 10. století pokračuje jako královský a později salcburský dvůr “ad Astaruuizam”.

Primary sources

Capit. reg. Franc. I.: A. Boretius (ed.), Capitularia regum Francorum. MGH Capit. 1 (Hannover 1883).

MC III: A. v. Jaksch (ed.), Monumenta Historica Ducatus Carinthiae. Geschichtliche Denkmäler des Herzogtumes Kärnten. Dritter Band. Die Kärntner Geschichtsquellen 811–1202 (Klagenfurt 1904).

MGH DD LD: Monumenta Germaniae Historica. Diplomata Regum Germaniae ex stirpe Karolinorum 1 (Berlin 1934).

References

Beck et al. 1995 – H. Beck/B. H. Jankuhn/G. H. Steuer/F. D. Timpe/W. R. Wenskus (eds.), Hoops Reallexikon der Germanischen Altertumskunde 9 (Berlin – New York 1995).

Brather 1996 – S. Brather, Merowinger- und karolingerzeitliches „Fremdgut“ bei den Nordwestslawen. Gebrauchsgut und Elitenkultur im südwestlichen Ostseeraum. Prähist. Zeitschr. 71, 1996, 46–84.

Breibert 2005 – W. Breibert, Das karolingerzeitliche Hügelgräberfeld von Wimm, MG Maria Taferl, VB Melk, Niederösterreich. Untersuchungen zur Problematik frühmittelalterlicher Bestattungssitten im niederösterreichischen Donauraum. Arh. Vestnik 56, 2005, 391–433.

Breibert 2008 – W. Breibert, Grabfunde aus Krungl in der Steiermark. Neues zu einem altbekannten frühmittelalterlichen Gräberfeld. In: U. Steinklauber (ed.), Frühmittelalterarchäologie in der Steiermark. Beiträge eines Fachgesprächs anlässlich des 65. Geburtstags von Diether Kramer. Schild von Steier 4 (Graz 2008) 7–21.

Daim 1996 – F. Daim, Das awarische Gräberfeld von Zillingtal. In: F. Daim (ed.), Hunnen und Awaren – Reitervölker aus dem Osten. Burgenländische Landesausstellung 1996 (Eisenstadt 1996) 417–423.

Daim 1998 – F. Daim, Das awarische Gräberfeld von Zillingtal. Sechs Gräber mit „westlichen“ Gegenständen. Wissenschaftliche Arbeiten aus dem Burgenland 100 (Eisenstadt 1998) 87–136.

Daim 2000 – F. Daim, „Byzantinische“ Gürtelgarnituren des 8. Jahrhunderts. In: F. Daim (ed.), Die Awaren am Rand der byzantinischen Welt. Studien zu Diplomatie, Handel und Technologietransfer im Frühmittelalter. Monographien zur Frühgeschichte und Mittelalterarchäologie 7 (Innsbruck 2000) 77–204.

Eichert 2009 – St. Eichert, KG St. Georgen am Längsee. Fundber. Österreich 47 (2008), 2009, 602.

Eichert 2010 – St. Eichert, Die frühmittelalterlichen Grabfunde Kärntens. Die materielle Kultur Karantaniens anhand der Grabfunde vom Ende der Spätantike bis ins 11. Jahrhundert. Aus Forschung und Kunst 37 (Klagenfurt 2010).

Eichert/Mehofer/Baier 2011 – St. Eichert/M. Mehofer/R. Baier, Archäologische und archäometallurgische Untersuchungen an einer karolingerzeitlichen Flügellanzenspitze aus dem Längsee in Kärnten/Österreich. Archäologisches Korrespondenzblatt 41(*1*), 2011, 139–154.

Gemeinde St. Georgen am Längsee 1995 – Gemeinde St. Georgen am Längsee (ed.), Das Buch von Sankt Georgen am Längsee. Vierzig Dörfer in Kärnten (Klagenfurt 1995).

Haberstroh 2002 – J. Haberstroh, Die Bamberger Götzen – ein Zeugnis vorchristlicher Kultvorstellungen? In: J. Kirmeier/B. Schneidmüller/St. Weinfurter/E. Brockhoff (eds.), Kaiser Heinrich II. 1002–1024. Katalog zur Bayerischen Landesausstellung 2002. Bamberg, 9. Juli bis 20. Oktober 2002. Veröffentlichungen zur Bayerischen Geschichte und Kultur 44 (Augsburg 2002) 127–130.

Hausmair 2008 – B. Hausmair, Die frühmittelalterlichen Grabfunde von Micheldorf/Kremsdorf, OÖ. Unveröffentlichte Diplomarbeit, Universität Wien (Wien 2008).

Herdits 2000 – H. Herdits, Schweißeisen – seine Herstellung, Bearbeitung und Veredelung im archäologischen Experiment. In: H. Friesinger/K. Pieta/J. Rajtar (eds.), Metallgewinnung und Verarbeitung in der Antike (Schwerpunkt Eisen). Archaeologica Slovaca Monographiae III (Nitra 2000) 63–69.

Jung/Moschos/Mehofer 2008 – R. Jung/I. Moschos/M. Mehofer, Killing in the same Way! Peaceful relations on war between Western Greece and Italy during the late Mycenaean Times? In: S. A. Paipetis/Ch. Giannopoulou (eds.), Cultural cross fertilization of Southern Italy and Western Greece through history (Pátras 2008) 85–107.

Kahl 1999 – H. D. Kahl, Der Millstätter Domitian. Abklopfen einer problematischen Klosterüberlieferung zur Missionierung der Alpenslawen Oberkärntens (Stuttgart 1999).

Kirchweger 2005 – F. Kirchweger (ed.), Die Heilige Lanze in Wien. Insignie – Reliquie – „Schicksalsspeer". Schriften des Kunsthistorischen Museums 9 (Wien 2005).

Kiss 1996 – A. Kiss, Das awarenzeitlich gepidische Gräberfeld von Kölked-Feketekapu A. Studien zur Archäologie der Awaren 5, Monographien zur Frühgeschichte und Mittelalterarchäologie 2 (Innsbruck 1996).

Kohla 1973 – F. X. Kohla, Kärntner Burgenkunde. Aus Forschung und Kunst 17 (Klagenfurt 1973).

Kouřil 2005 – P. Kouřil, Frühmittelalterliche Kriegergräber mit Flügellanzen und Sporen des Typs Biskupija-Crkvina auf mährischen Nekropolen. In: P. Kouřil (ed.), Die frühmittelalterliche Elite bei den Völkern des östlichen Mitteleuropas. Spisy Arch. Ústavu AV ČR Brno 25 (Brno 2005), 67–99.

Losert 2009 – H. Losert, Moinvinidi, Radanzvinidi und Nabavinidi. Geschichte und Archäologie der Slawen in Bayern. In: F. Biermann/Th. Kersting/A. Klammt (ed.), Siedlungsstrukturen und Burgen im westslawischen Raum. Beiträge zur Ur- und Frühgeschichte Mitteleuropas 52 (Langenweissbach 2009) 219–294.

Mehofer 2003 – M. Mehofer, Metallurgische Untersuchungen an Eisengegenständen aus dem awarischen Gräberfeld Zilligtal. Unpublizierter Untersuchungsbericht (Wien 2003).

Mehofer 2006 – M. Mehofer, Metallurgische Untersuchungen an einem Säbel aus dem ungarischen Reitergrab von Gnadendorf. In: F. Daim/E. Lauermann (eds.), Das frühungarische Kriegergrab aus Gnadendorf, Niederösterreich. Monographien des Römisch-Germanischen Zentralmuseums 64 (Mainz 2006) 159–174.

Mehofer 2007 – M. Mehofer, Technologische Analysen an der Spatha von Hohenberg, Steiermark. Arch. Austriaca 89, 2007, 251–254.

Mehofer/Leusch/Bühler 2005 – M. Mehofer/V. Leusch/B. Bühler, Die Schmiedetechnik der „Heiligen Lanze". In: Kirchweger 2005, 169–190.

Menghin 1980 – W. Menghin, Neue Inschriftenschwerter aus Süddeutschland und die Chronologie karolingischer Spathen auf dem Kontinent. In: Vorzeit zwischen Main und Donau. Erlanger Forschungen Reihe A 26 (Erlangen 1980) 227–272.

Mäder 2007 – St. Mäder, Bibliographie zur Schmiedetechnik und zum Material historischer Blankwaffen. Unpublished manuskript.

Müller-Wille 1982 – M. Müller-Wille, Zwei karolingische Schwerter aus Mittelnorwegen. In: Studien zur Sachsenforschung 3 (Oldenburg 1982) 101–154.

Nowotny 2007 – E. Nowotny, Das frühmittelalterliche Gräberfeld von Hohenberg, Steiermark, mit Exkursen zur historischen und archäologischen Situation im Ostalpenraum. Arch. Austriaca 89/2005 (2007) 177–250.

Osgood 1998 – R. Osgood, Warfare in the late Bronze Age of North Europe. BAR International Series 694 (Oxford 1998).

Pleiner 2006 – R. Pleiner, Iron in archaeology: early European blacksmiths (Praha 2006).

Pleterski 1986 – A. Pleterski, Župa Bled, nastanek, razvoj in prežitki. Dela, Slovenska Akademija Znanosti in Umetnosti, Razred za Zgodovinske in Družbene Vede 30 (Ljubljana 1986).

Pleterski 2004 – A. Pleterski, Spuren slawischer Fürstentümer im Ostalpenraum. In: W. R. Baier/D. Kramer (eds.), Karantanien. Mutter von Kärnten und Steiermark. Studia Carinthiaca 22 (Klagenfurt – Ljubljana, Wien 2004) 57–68.

Sacherer 1995 – J. Sacherer, Zur Geschichte der Kirchen und Pfarren. In: Gemeinde St. Georgen am Längsee 1995, 150–166.

Sekelj Ivančan 2007 – T. Sekelj Ivančan, Another Find of an Early Carolingian Winged Spearhead from the Grav. Extract. Plant of Jegeniš. Prilozi 24, 2007, 419–427.

Stadler 2005 – P. Stadler, Quantitative Studien zur Archäologie der Awaren I. Mitteilungen der Prähistorischen Kommission 60 (Wien 2005).

Stein 1967 – F. Stein, Adelsgräber des achten Jahrhunderts in Deutschland. Germanische Denkmäler der Völkerwanderungszeit A 9 (Berlin 1967).

Steuer 1995 – H. Steuer, Art. Flügellanzen. In: Beck et al. 1995, 251–254.

Steuer 1999 – H. Steuer, Handel und Wirtschaft in der Karolingerzeit. In: C. Stiegemann/M. Wemhoff (eds.), Kunst und Kultur der Karolingerzeit. Karl der Große und Papst Leo III. 3 (Mainz 1999) 406–416.

Szameit 1986 – E. Szameit, Karolingerzeitliche Waffenfunde aus Österreich I. Die Schwerter. Arch. Austriaca 70, 1986, 385–411.

Szameit 1987 – E. Szameit, Karolingerzeitliche Waffenfunde aus Österreich II. Die Saxe und Lanzenspitzen. Arch. Austriaca 71, 1987, 155–171.

Szameit 1992 – E. Szameit, Ein VLFBERHT-Schwert aus der Donau bei Aggsbach. Arch. Austriaca 76, 1992, 215–221.

Szameit 1994a – E. Szameit, Zu Funden des 8. Jahrhunderts aus Kärnten. Acta Histriae II, 1994, 89–92.

Szameit 1994b – E. Szameit, Merowingisch-karantanisch-awarische Beziehungen im Spiegel archäologischer Bodenfunde des 8. Jahrhunderts. Ein Beitrag zur Frage nach

den Wurzeln frühmittelalterlicher Kulturerscheinungen im Ostalpenraum. Neues aus Alt-Villach 31, 1994, 5–24.

Szameit 2005 – E. Szameit, Die heilige Lanze der Wiener Schatzkammer. Bemerkungen zu Form und Verwendung von Flügellanzen aus dem Blickwinkel der Archäologie und der Waffenkunde. In: Kirchweger 2005, 145–168.

Szameit/Mehofer 2002 – E. Szameit/M. Mehofer, Technologische Untersuchungen an Waffen des Frühmittelalters aus Oberösterreich. Jahrbuch des Oberösterreichischen Musealvereins. Gesellschaft für Landeskunde 147(*1*), 2002, 127–169.

Szameit/Stadler 1993 – E. Szameit/P. Stadler, Das frühmittelalterliche Grab von Grabelsdorf bei St. Kanzian am Klopeinersee, Kärnten. Arch. Austriaca 77, 1993, 213–242.

Tropper 1995 – Ch. Tropper, Das Benediktinerinnenstift St. Georgen am Längsee. In: Gemeinde St. Georgen am Längsee 1995, 167–182.

Tylecote/Gilmour 1986 – R. F. Tylecote/B. J. J. Gilmour, The metallography of early ferrous edge tools and edged weapons. BAR 155 (Oxford 1986).

Vinski 1983 – Z. Vinski, Zu karolingischen Schwertfunden aus Jugoslawien. Jahrb. RGZM 30, 1983, 465–501.

Wegener 1995 – R. Wegener, Art. Flussfunde. In: Beck et al. 1995, 273–276.

Westphal 2002 – H. Westphal, Franken oder Sachsen. Untersuchungen an frühmittelalterlichen Waffen. Studien zur Sachsenforschung 14 (Oldenburg 2002).

Wieczorek/Hinz 2000 – A. Wieczorek/H. M. Hinz, Europas Mitte um 1000, Ausstellungskatalog (Stuttgart 2000).

Wolfram 1995 – H. Wolfram, Grenzen und Räume. Geschichte Österreichs vor seiner Entstehung. Österreichische Geschichte 378–907 (Wien 1995).

Mag. Dr. Stefan Eichert
Universität Wien
Institut für Ur- und Frühgeschichte
Franz Klein Gasse 1
A-1190 Wien
E-mail: stefan.eichert@univie.ac.at

Dr. des. Mag. Ing. Mathias Mehofer
Archäometallurgie
VIAS Vienna Institute for Archaeological Science
Franz Klein-Gasse 1
A-1190 Wien
E-mail: mathias.mehofer@univie.ac.at

Bewaffnung und Reiterausrüstung des 8. bis 10. Jahrhunderts in Mitteleuropa
Waffenform und Waffenbeigaben bei den mährischen Slawen
und in den Nachbarländern

in der Reihe „Internationale Tagungen in Mikulčice“ (ITM) Band IX
Herausgegeben von Lumír Poláček – Pavel Kouřil

Verantwortlicher Redakteur: Lumír Poláček
Redaktion: Petr Luňák, Zdeňka Pavková
Layout und Textgestaltung: Zdeňka Pavková
Übersetzung: Pavla Seitlová, Tereza Bartošková
Sprachliche Korrekturen: Torsten Kempke, Paul Michael Maddock
Umschlaggestaltung: Pavel Dvorský, Barbora Pokorná / Atelier Zidlicky
Druck: Azu design s. r. o.

ISBN 978-80-86023-59-5
ISSN 1804-1345

INTERNATIONALE TAGUNGEN IN MIKULČICE

BEWAFFNUNG UND REITERAUSRÜSTUNG DES 8. BIS 10. JAHRHUNDERTS IN MITTELEUROPA