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Textiles on Avar Period Pellet Bells from Komárno-Lodenice

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Site: Komárno-Lodenice
Excavator: Alexander Trugly

Textile analyses: [Kayleigh Saunderson]
Graphics: [Kayleigh Saunderson]
Microscope photos: [Kayleigh Saunderson]

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Year of discovery: 1979–1989

Museum location: Podunajske Muzeum Komárno

Date: Avar period (MA II – LAP I, ca. 655 – 720 AD)

Feature and type of conservation: Burial finds, conserved by corrosion

Initial recording: Kayleigh Saunderson, August 2021

Literature: A. Trugly: Gräberfeld aus der Zeit des awarischen Reiches bei der Schiffswerft in Komárno II. Slovenská Archeológia XLI-2, 1993, 191–307.

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Short description of the site and context

The Avar cemetery of Komárno-Lodenice is located on a hill in the western part of the Slovakian city, on the left bank of the Danube, which represents the border between Slovakia and Hungary at the point where the Vah enters the Danube. Strategically, the place is of great importance, as on the one hand it allows the monitoring of the great waterway from west to east, and on the other hand, through the Vah, it provides a navigable route to the northern region, highly suitable for trade, defence, and martial attacks. The first excavations of the cemetery were carried out between 1979 and 1983 (tombs 1–90), published in Slovenská Archeológia by Alexander Trugly in 1987. Some textiles from this excavation were analysed and published by Jana Dolejšova in the same issue.

The western part of the cemetery was only excavated in a later campaign in 1987 – 1989 (tombs 91–153), which was again presented by Alexander Trugly in Slovenská Archeológia 1993. In total, 153 burials were documented. At the same time, remains of an Avar period settlement were found west of the burial grounds.

Six pellet bells from tombs 86, 91, 110, 149, and 153 were analysed for their textile remains as a part of the project ‘Metallic Idiophones between 800 BC and 800 AD in Central Europe’, led by Mag. Dr. Beate Maria Pomberger. All objects except one (A-5638) derive from the second excavation campaign.

Method of Textile Analysis

The analysis of these objects was carried out on a macroscopic as well as a microscopic level. The textile's structure and quality were documented using a digital microscope (DinoLite digital microscope), which allows magnifications between 30x and 250x. The corresponding software enables the determination of the width and spin angle of the thread. The thread width, the orientation of the warp and weft, fine textile structures, as well as details of seams are able to be identified. Technical data (fig.) that can be captured from the woven textile are weave type, thread density, thread width, twine or yarn, S- or Z-spun, various weaving mistakes, seams and hems, as well as decoration.

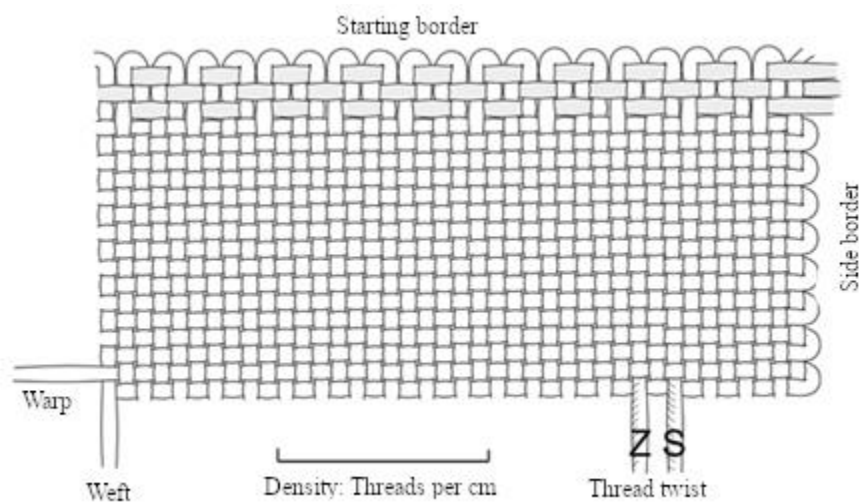


Fig. Technical features of woven textiles (image: K. Grömer)

Textile Catalogue

Tomb 86

Feature description

Child, bronze pellet bell between right arm and pelvis, iron object by the right foot

Find Nr. A-5638: pellet bell

Textile description:

Tabby woven(?) textile, mostly badly preserved

Textile A

Colour and material: -

Size: 6 x 5 mm

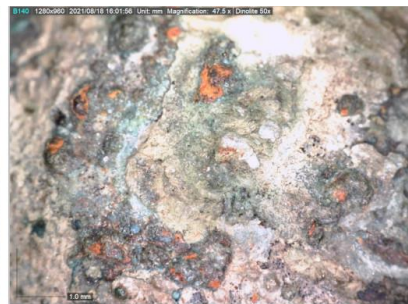
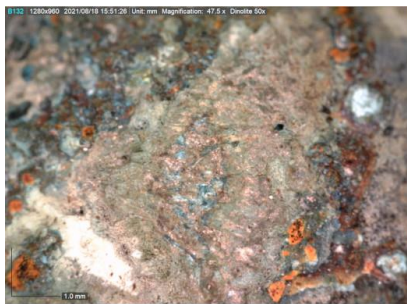
Identification of warp and weft: no

Technical details of the textile:

	System 1	System 2
Yarn/Ply Yarn	Y	Y
Twist	s	s
Degree of Twist	30°	30°
Thread Diameter	0.3 – 0.4 mm	0.3 – 0.4 mm
Thread Density (Threads per cm)	10 within 4 mm	8 within 3.5 mm

Weave: Tabby?

Special features, hems, seams, patterns: -



Textile A in x50, x50, x250 magnification

Tomb 91

Feature description

Child (infans III), disturbed burial, bones scattered around the skull. Finds: two iron pellet bells, two iron rings, pot sherds at the left hand and the lower limbs

Find Nr. A-6052: pellet bell

Textile description:

Tabby woven textile

Textile A

Colour and material: -

Size: 8 x 7 mm

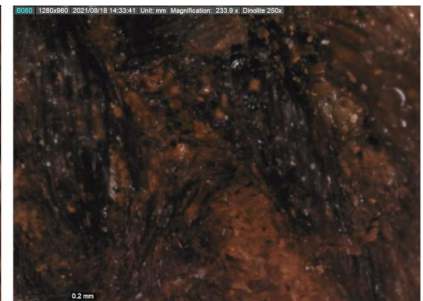
Identification of warp and weft: no

Technical details of the textile:

	System 1	System 2
Yarn/Ply Yarn	Y	Y
Twist	z	z
Degree of Twist	30°	30°
Thread Diameter	0.3 – 0.4 mm	0.4 – 0.5 mm
Thread Density (Threads per cm)	7 – 8 within 5 mm	8 – 9 within 5 mm

Weave: Tabby

Special features, hems, seams, patterns: -



Textile A x50, x50, x250 magnification

Find Nr. A-6053: pellet bell

Textile description:

Tabby woven textile, unevenly twisted threads

Textile B

Colour and material: -

Size: 13 x 6 mm

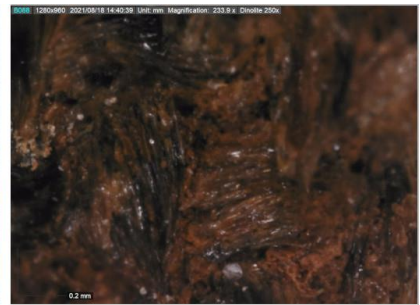
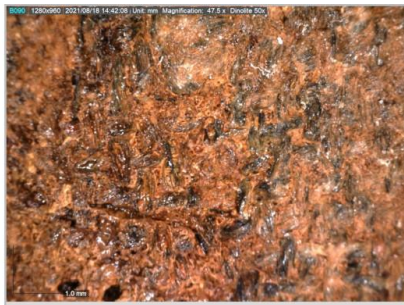
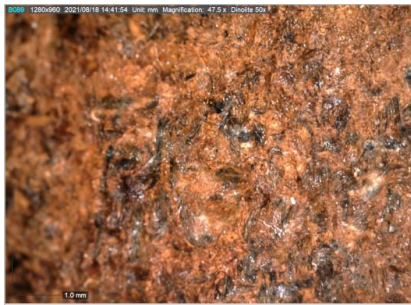
Identification of warp and weft: no

Technical details of the textile:

	System 1	System 2
Yarn/Ply Yarn	Y	Y
Twist	s	s
Degree of Twist	10 – 30°	10 – 30°
Thread Diameter	0.3 – 0.5 mm	0.3 – 0.5 mm
Thread Density (Threads per cm)	9 – 10 within 5 mm	13 within 5 mm

Weave: Tabby

Special features, hems, seams, patterns: -



Textile B x50, x50, x250 magnification

Tomb 110

Feature description

Child (infans II), disturbed burial, bones scattered, skull of a goat in NW-part, knife by the child's skull, iron object with bronze rivets and iron pellet bell by the legs

Find Nr. A-6070: pellet bell

Textile description:

Badly preserved, tabby woven textile and traces of another organic substance — possibly fur

Textile A

Colour and material: -

Size: 6 x 4 mm

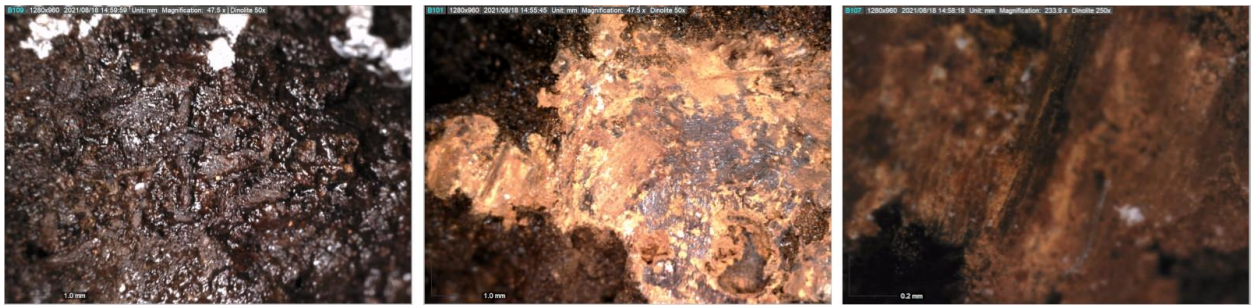
Identification of warp and weft: no

Technical details of the textile:

	System 1	System 2
Yarn/Ply Yarn	Y	Y
Twist	z	z
Degree of Twist	30 – 40°	30°
Thread Diameter	0.3 – 0.5 mm	0.4 – 0.5 mm
Thread Density (Threads per cm)	10 within 6 mm	8 within 4 mm

Weave: Tabby

Special features, hems, seams, patterns: -



Textile A x50, fur(?) x50, x250 magnification

Tomb 149

Feature description

Man (adultus I) and horse, disturbed burial, bones and burial goods scattered throughout the tomb, iron bucket hoops, belt and bridle mounts, stirrup, iron arrow heads, pig and chicken bones, two iron pellet bells

Find Nr. A-6103: pellet bell

Textile description:

Badly preserved, tabby woven textile

Textile A

Colour and material: -

Size: 4 x 4.5 mm

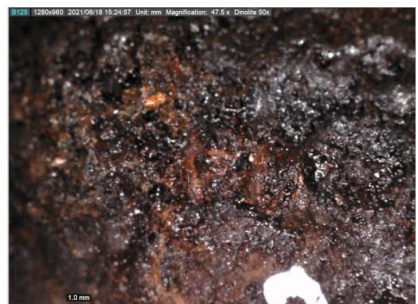
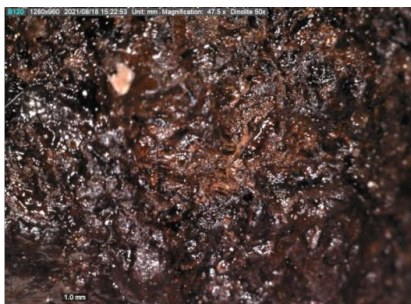
Identification of warp and weft: no

Technical details of the textile:

	System 1	System 2
Yarn/Ply Yarn	Y	Y
Twist	s	s
Degree of Twist	30 – 40°	30 – 40°
Thread Diameter	0.5 – 0.6 mm	0.4 – 0.5 mm
Thread Density (Threads per cm)	5 within 4 mm	7 within 4 mm

Weave: Tabby

Special features, hems, seams, patterns: -



Textile A x50, x50, x50 magnification

Tomb 153

Feature description

Man (maturus I) and horse, disturbed burial, bones and burial goods scattered throughout the tomb except for the horse's lower limbs, bridle and belt mounts between the horse's and man's bones, knife by the left femur, bucket hoop in the NW part of the tomb, buckle between the ribs, vessel and animal bones (cattle, goose) by the left foot, gilded bronze pellet bell

Find Nr. A-6117: pellet bell

Textile description:

Badly preserved, probably tabby woven textile

Textile A

Colour and material: -

Size: 7 x 2 mm

Identification of warp and weft: no

Technical details of the textile:

	System 1	System 2
Yarn/Ply Yarn	Y	Y
Twist	z?	s
Degree of Twist	-	30 – 40°
Thread Diameter	0.3 – 0.4 mm	0.4 – 0.6 mm
Thread Density (Threads per cm)	-	4 within 3 mm

Weave: Tabby?

Special features, hems, seams, patterns: -



Textile A x50, x50, x50 magnification

Results

Six different textile fragments were found on the analysed pellet bells from Komárno-Lodenice. The textiles all seem to be tabby woven with single-yarn, which is typical for the Avar period. The diameters of the threads are also common (see Avar period textiles from the Austrian cemeteries of Sommerein, Frohsdorf, Zwölfaxing, Leobersdorf). The number of analysed textiles is small, yet it should be remarked that the s-twisted threads — found in four of the six textiles — are not typical for the Avar period and the Early Medieval period in general, though they do occur regularly.

Unfortunately, tombs 91, 110, 149, and 153 are disturbed, so the original positions of the pellet bells are unclear, which could have offered some information on the functions of the textiles. It is unlikely that the pellet bells were wrapped in the textiles, as they were only found on one side of the objects. They possibly belonged to pieces of clothing, on which the pellet bells were attached to or lain on/under, or perhaps a burial shroud.

Only tomb 86 was not disturbed, so the pellet bell A-5638 — located between the pelvis and the right arm — might have been attached to a belt or lain beside the body, meaning that the textile could derive from e.g., a tunic or kaftan.

The organic substance on pellet bell A-6070 from tomb 110 could not be determined — it is possibly fur. It seems to have many fine fibres and few thick fibres — one could suggest the fur of goat, which does not necessarily correlate with the goat's skull in this tomb. In the Byzantine *strategikon* (book 1.2, verses 46–49), Maurikios describes the Avars' tunics consisting of goat's fur (or linen). So, it is well possible that this substance is a tunic made from goat's fur. In the case that it is fur, it could also be part of a blanket or lain out beneath the body.

Tomb Nr.	Inv. Nr.	Yarn/Ply Yarn	Twist		Degree of Twist		Thread Diameter in mm		Thread Count per cm		Weave
86	A-5638	Y	s	s	30	30	0.3-0.4	0.3-0.4	~25	22-23	Tabby?
91	A-6052	Y	z	z	30	30	0.3-0.4	0.4-0.5	14-16	16-18	Tabby
91	A-6053	Y	s	s	10-30	10-30	0.3-0.5	0.3-0.5	18-20	~23	Tabby
110	A-6070	Y	z	z	30-40	30	0.3-0.5	0.4-0.5	16-17	~20	Tabby
149	A-6103	Y	s	s	30-40	30-40	0.5-0.6	0.4-0.5	12-13	17-18	Tabby
153	A-6117	Y	z?	s	-	30-40	0.3-0.4	0.4-0.6	-	13-14	Tabby?

Tab.