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Milena Bravermanová

## The oldest textile items from the reliquary tomb of St. Ludmila

St. Ludmila was the first Duchess of Bohemia, and was baptised together with her husband Duke Bořivoj of the Přemyslid dynasty in Greater Moravia around the year 885. In 921 her daughter-in-law Drahomíra had her murdered at the ducal residence of Tetín near Prague. It was here that she was first buried. In 925 her grandson Duke Václav (St. Wenceslas) had her remains translated from Tetín to Prague and buried somewhere in the Basilica of St. George. Here her tomb was moved several times: for some time it could be found in a cross-shaped cavity lying on the axis of the church (known as the tomb of relics), later near the altar of the Holy Rood, and also in a richly decorated casket by the main altar of St. George. Around the year 1371 her remains found their final resting-place in the southern chapel below a gothic sepulchre (Fig. 1).

St. Ludmila is one of the most important Czech patron saints. However, widespread devotion to her was only established relatively slowly at the beginning. Her translation in the year 925 could have been regarded as her canonisation, but for a long time the cult of St. Ludmila was restricted to the ruling dynasty of the Přemyslids and to the monastery of St. George where her remains were interred. It was not until the middle of the twelfth century that she was officially proclaimed a saint.

The tomb of St. Ludmila was opened in 1981 as part of an anthropological examination of the skeletal remains of historical personalities. In the vault below the neogothic altar in the chapel two lead caskets were found. In the first, which bore Ludmila's name, textiles were found in addition to the skeletal remains: a white cloth with brown embroidery, a white cloth with red embroidery, a piece of beige silk with a woven pattern, and a piece of brown unpatterned silk. Among the bones of the duchess was a "package" of crumpled white cloth with a geometric pattern containing fragments of unpatterned cloth (Fig. 2). In the second casket were found three skulls of unknown women, two of them wrapped in brown silk and one in purple silk (Fig. 3).

After being removed the textiles were restored in the State Restoration Workshops. One might have certain reservations about some of the procedures used at that time. In 1999 and 2000 Vendulka Otavská and Angelika Sliwka carried out fresh technological analyses of the textiles in the newly built conservation and restoration workshop of the Administration of Prague Castle and conserved some of the fabrics once again.



Fig. 1. View of the neogothic altar, the tomb of St. Ludmila, and the open vault. Photo from the Prague Castle Management archives.

On this occasion, in cooperation with other specialists, we also carried out scientific investigations, which have helped us to shed light from on different matters, not only on the dating the fabrics, but also on resolving issues related to how the remains of the saint had been moved in the past. One of the methods we used was that of detecting the presence of DNA, carried out by Ivan Mazura. By comparison with the authentic DNA of St. Ludmila, obtained from a minute sample from her skull, it was demonstrated that, with the exception of the unpatterned linen fragments, the

fabrics did not contain the DNA of the saint. This therefore means that, apart from the one exception mentioned, the fabrics must have come into contact



Fig. 2. Coffin with the remains of St. Ludmila. Photo from the Prague Castle Management archives.

with her remains later on. The archaeobotanical and archaeozoological examination carried out by Jaromír Beneš led to the same conclusion. This helped us discover new information about the samples removed from the “package”. The samples were found not to contain any pollen or macro-residues. The “package” had therefore not been in a soil environment. On the contrary, it must have been placed in an environment where the circulation of air was limited. The same conclusion was reached by analysis of the entomofauna, characterised as those that survive in a shaded or covered, but relatively dry environment. Again the possibility of the “package” originating from a soil environment was clearly excluded. The dating of unpatterned linen and embroidered textile was verified by determining the  $^{14}\text{C}$  decay by Robert Hedges in the radiocarbon acceleration laboratory in Oxford. We wanted to know when these textiles could have been woven. Both sets of data established by scientific research agree with our historical interpretation.

The small fragments of delicate unpatterned linen cloth found in the “package” of linen material with a geometric pattern may be considered to be the remains of the oldest textiles (Fig. 4, anex 1). On some of the fragments of this fabric the remains of sewn borders and trimmed corners have been preserved. It may therefore be the remains of clothing or a square veil or altar covering, or possibly a humeral veil. Since linen was cultivated in the early Middle Ages in Asia,

North Africa, and throughout Europe, and thus in Bohemia, too, the material may have been of domestic origin, although it is remarkably delicate. Human DNA was found on the fabric. Since it corresponded to a large degree with the DNA of St. Ludmila (it was not possible to take a clear reading of a small section of the nucleotides when sequencing them), it can be assumed that this textile was used for the first translation in the year 925 from Tetín to Prague. According to a historical source from the end of the tenth century, known as the *Kristián Legends*, Ludmila’s remains were wrapped in a cloth for this journey. However, the textile was unlikely to have been in the grave in Tetín, for no remnants of the soil environment have been found in the samples. The dating of the  $^{14}\text{C}$  decay agrees with our interpretation, as it indicates the year  $926\pm35$ .

The material that these fragments were wrapped in, and which has already been mentioned, was a linen fabric decorated with an embroidered geometric pattern based on a swastika (Fig. 5, anex 2). Both the embroidery and the background were made of linen and were coloured white. This fabric, too, was found in a fragmentary state. Since, according to written sources, a tradition of embroidery existed in St. George’s monastery, this material, too, may have been domestic in origin. If it was imported, then probably from the German area or from Egypt. It is possible to



Fig. 3. Coffin with the remains of three unknown women. Photo from the Prague Castle Management archives.

date it to the second half of the tenth century. It is the oldest example of embroidery to be found in our country. The  $^{14}\text{C}$  dating indicates the year  $1024\pm40$  which corresponds closely with our historical interpretation.



Another piece of material used to wrap the bones of St. Ludmila was a silk fabric which is today a beige colour. The pattern, which can now only be made out with difficulty, is woven in the same colour as the background and is based on the contrast between matt

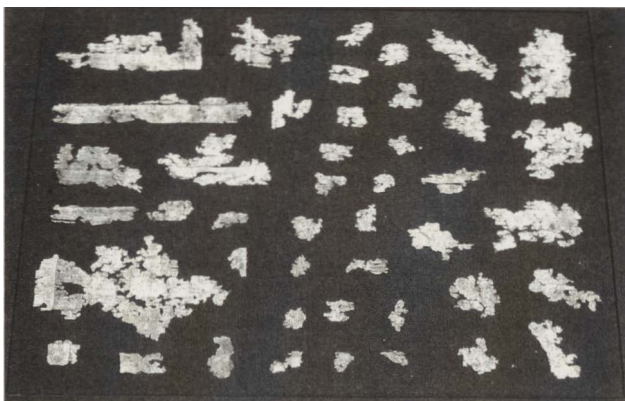


Fig. 4. Linen fragments, photo of the whole. *Photo J. Gloc.*

and shiny areas. As has now been demonstrated, the material is woven using the rarely preserved binding known as protolampas (annexe 3). Most of the preserved fabric (up to the band on the lower border) is decorated by double-circle medallions that touch each other (Fig. 6). The area between the two circles is filled by tendrils. Within the medallions birds are placed symmetrically on either side of a tree. An identical pattern is to be found on two other known fabrics, chasubles preserved in fragments, that are believed to have been worn by bishops (Bernward of Hildesheim and Meinwerk of Paderborn) living in the first half of the eleventh century in Germany. However, it transpires that in addition to the pattern just described, there is a band on the lower border of the fabric from St. Ludmila's coffin decorated with a pattern that was previously unknown, woven with the same binding (Fig. 7). This pattern is finer. In one row there are medallions consisting of circles containing four small birds facing each other in pairs, and in the next there are octagons containing four birds facing each other with fluttering ribbons round their necks. The medallions are all linked to each other. On the basis of an interpretation of the two patterns, it seems that the fabric which was placed with Ludmila's remains was woven in the first third of the eleventh century in Byzantium or in some Islamic workshop in the Near East, in Iraq or Syria.

Up until now, the material was believed to be the pall for the reliquary coffin. However, it has now been shown that it is the rear part of a dalmatic, originally decorated with two parallel red bands, sewn onto it in a vertical direction (Fig. 8: 1). The neck and sides were hemmed with a silk fabric with a gold pattern. These decorative elements are not preserved (Fig. 8:

2). We believe that the dalmatic came to Bohemia as a finished garment, intended to be worn by a bishop. Probably only the rear part of it has been preserved. It is possible that the entire garment was originally placed in St. Ludmila's coffin. After having come into contact with her remains it would have become a secondary relic. Some parts of the garment might then have been distributed among altars in churches and chapels.

A brown unpatterned silk fabric with no traces of cutting was also found in both the reliquary caskets (annexe 4), and a red silk material (annexe 5), probably the remains of a piece of lining. Both of them were probably imported from Asia, Byzantium, or the Islamic Empire. A red unpatterned weft-faced compound twill lay in the space in front of both caskets (annexe 6). Other fabrics from the casket of St. Ludmila – the remains of a surplice and an altar covering – are more recent and so far we have not examined them.

The re-interpretation of the oldest fabrics from the reliquary casket of St. Ludmila has brought clarification on several points, particularly with regard to dates. We can therefore attempt to use the results of the examination to shed light on questions surrounding the form and location of the earliest graves of St.



Fig. 5. Geometrically decorated fabric. *Photo J. Gloc.*

Ludmila and the places where the casket (or caskets) with her remains were placed.

The earliest legends recount that immediately after her murder on 15 September 921 St. Ludmila was buried in a grave in the earth in Tetín. In the year 925 St. Václav (Wenceslas) had his grandmother translated from Tetín to Prague and placed in the basilica of

St. George in a grave dug in the earth. For a long time it was believed that St. Ludmila was kept for a certain time in the southern chapel of the basilica in the cavity for graves in front of the altar, which today is

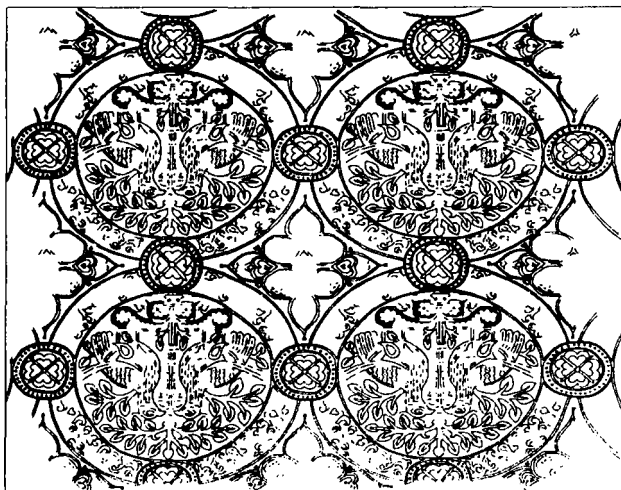


Fig. 6. Pattern with pairs of birds in circles. Drawn V. Otavská.

empty. Recently however this interpretation has been called into question. In the thirteenth century it was recorded that the relics of St. Ludmila reposed at the time in a magnificent casket behind the main altar of St. George. The altar however at that time was already in the raised Romanesque presbytery, which was not built until after the reconstruction of the basilica after a fire in the year 1142. The remains of the saint were most probably not transferred to the side chapel until after 1371.

The resting-place of St. Ludmila in earlier times must therefore have been somewhere else. On the basis of a reference to its location in a description of the fire in Prague Castle in 1142 it can be assumed to have been beside the altar of the Holy Rood. The casket was however no longer in the earth, but was accessible. In the basilica of St. George the altar of the Holy Rood is recorded to have been by the grave of Duke Boleslav II (died 999). The earliest legends however indicate that the first grave of St. Ludmila in the basilica was below the level of the floor.

To the east of the grave of Boleslav II, and so close to it that it was disturbed when Boleslav's remains were interred, was a cavity in the shape of a cross, enclosed by stones joined with mortar (Fig. 9). One possible interpretation is that it was constructed sometime during the tenth century, probably in connection with the foundation of the female monastery in 973, as a tomb for relics. In our view it is probable that it was made for the remains of St. Ludmila. It was already a reliquary tomb, but still in the earth. The most likely date for the removal of St. Ludmila from this cross-shaped cavity is 999, when the cavity must

have lost its original function. However, the casket with her remains stayed near the altar of the Holy Rood.

If we compare these findings with the dating of the fabrics, it is possible to conclude that the piece of linen textile, today preserved only in fragments, was used during the first translation in the year 925. This theory is supported by the human DNA found on it, which to a large extent corresponds with that of St. Ludmila. The material was however most probably not in the grave in Tetín, because no traces of a soil environment have been found in the samples. The remains of the saint were wrapped in the embroidered fabric before being placed in the cross-shaped cavity, most likely in connection with the foundation of the monastery in 973. The dalmatic was not added until after 999. The oldest pieces of material from the casket of St. Ludmila can be regarded as what were known as *brandea*, that is, textiles that came into contact with the body or remains of a saint. The word was used to refer to part of the funeral attire of a saint, and in an extended sense any fabrics that had at some time touched the remains.

## Annexes:

### 1. Linen fragments

44 small fragments (accompanied by a quantity of loose material – the remains of different fabrics); on

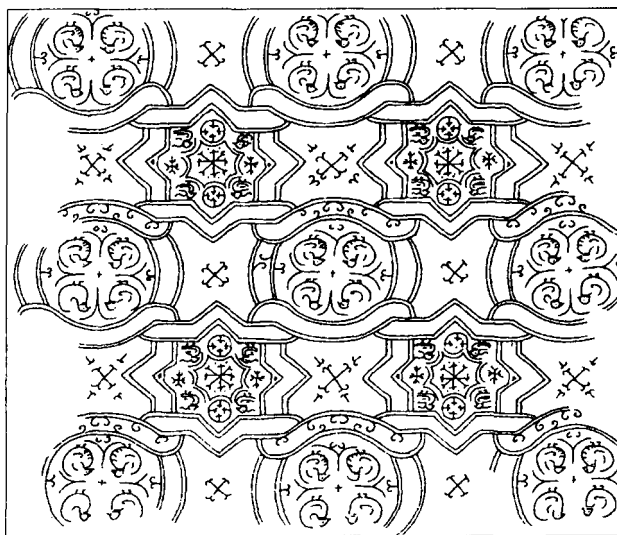


Fig. 7. Pattern with linked medallions. Drawn V. Otavská.

11 of the fragments a border has been preserved, stitched down with small stitches using linen thread; in 5 cases this is or could be a trimmed corner; in one case it appears that there are the remains of a further layer of fabric in the border, which might have been the housing for a belt or drawstring; one of the fragments could be the remains of a belt or drawstring.

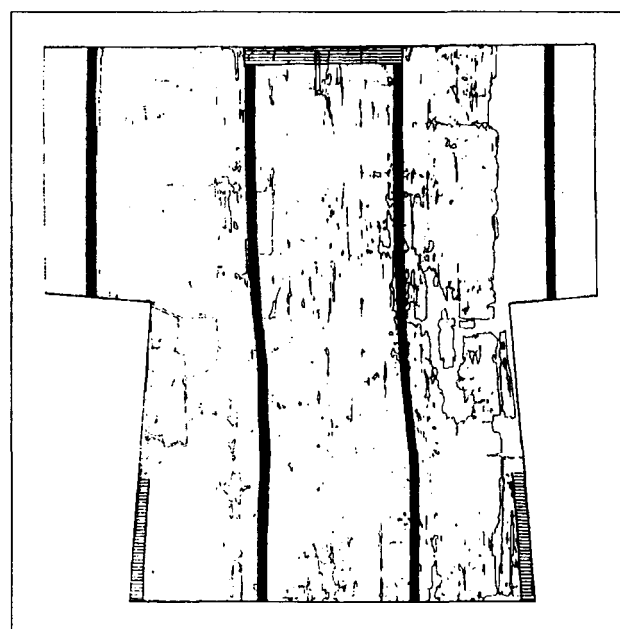


Fig. 8. 1 – protolampas, rear part of dalmatic, photo of the whole. *Photo J. Gloc*; 2 – reconstruction of the dalmatic. *Drawn V. Otavská*.

binding – tabby  
 material  
 warp: linen, Z twist, light-coloured  
 density – 36 to 44 warp ends per cm (mostly 40)  
 weft: linen, Z twist, light-coloured  
 density – 28 to 30 weft threads per cm (mostly 30)  
 selvage of the fabric not preserved, original total width unknown  
 no pattern  
 sewing thread – linen, S twist from two threads without visible twist, light-coloured

2. Fabric with embroidered geometrical pattern  
 binding – tabby  
 material  
 warp: linen, Z twist of irregular strength, light-coloured  
 density – 12 to 31 warp ends per cm, increasing towards the selvages  
 weft: linen, Z twist of irregular strength, light-coloured  
 density – 15 to 25 weft threads per cm  
 selvage – preserved on one side, original total width unknown  
 binding of the selvage – tabby  
 material – one warp thread – linen, S twist from two threads slightly Z-twisted, light-coloured  
 pattern – embroidery; thread – linen, S twist, light-coloured, coarser

### 3. Protolampas

binding – protolampas

(protolampas with derived tabby in the ground and 1/2 S twill in the pattern – the right side)  
 warp: one thread of main warp to one thread of binding warp  
 material  
 main warp: silk, Z twist, coarse white  
 binding warp: silk, Z twist, coarse white  
 découpure – one thread of main warp  
 density – 18 to 22 threads of the main warp and 18 to 22 threads of the binding warp per cm  
 weft: one ground weft, one lancé weft, all passées with the same weft order (in both patterns)  
 material  
 ground weft – silk without visible twist, coarse white  
 lancé weft – silk without visible twist, coarse white  
 découpure – 3 passées  
 density – 50 to 58 passées per cm  
 starting border: on the lower border of the dalmatic, fringes from warp threads about 1 cm long have been partially preserved, which might be rest of starting border  
 pattern repeat (two patterns):  
 (the height of the pattern repeat fluctuates with the density of the weft, the width of pattern repeat with the density of the warp)  
 – pattern repeat of “large” pattern: height 18 to 24.2 cm, width 24.3 to 28.2 cm  
 – pattern repeat of “small” pattern: full height not preserved, width is half width of “large” pattern  
 point repeat (with double point)  
 selvage of fabric not preserved, original total width unknown





Fig. 9. Cross-shaped cavity and tomb of Boleslav II. Taken from Borkovský 1975, picture 46.

#### 4. Brown fabric

binding – tabby  
 material:  
 warp: silk, Z twist, today a brown colour  
 density – 34 to 48 warp ends per cm, increasing towards the selvages  
 weft – silk, Z twist, today a brown colour (stronger than that of the warp)  
 density – 36 to 48 weft threads per cm (fluctuates irregularly)  
 selvage – preserved on both sides of the fabric, total width of the fabric – 46.5 cm-binding – tabby, width 2 mm (approximately, fluctuates)  
 – material – on one side 5 warp threads, silk, Z twist, today a brown colour, double or triple – on the other side 4 warp threads, silk, Z twist, today a brown colour, double or multiple  
 no pattern

#### 5. Red fabric

binding – tabby  
 material:  
 warp: silk without visible twist, today a red colour  
 density – 30 to 46 warp ends per cm, increasing towards the selvages  
 weft: silk without visible twist, today a red colour (stronger than the warp)  
 density – 20 to 30 weft threads per cm  
 selvage – preserved on one side, original total width unknown  
 – binding – tabby, width – 0.5 cm  
 – material – about 22 warp threads – silk without visible twist, today a red colour no pattern

#### 6. Weft-faced compound twill

binding – weft-faced compound twill with two weft systems  
 warp: one thread of main warp to one thread of binding warp  
 material  
 main warp: silk, Z twist, today a beige colour  
 binding warp: silk, Z twist, today a beige colour  
 density – 24 to 25 threads of main warp and 24 to 25 threads of binding warp per cm  
 weft – 2 weft systems, one weft appears on the right side of the fabric, the other on the wrong side  
 material  
 1. weft: silk, without visible twist, today a red-dish-brown colour  
 2. weft: silk, without visible twist, today a red-dish-brown colour  
 density – 36 to 42 passées per cm  
 selvage not preserved, original total width unknown  
 no pattern

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