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# 10th century AD textiles from female burial II-301 at Gnëzdovo, Russia

The Gnëzdovo archaeological site dated to the 10th-11th century AD comprises several barrow cemeteries and a settlement. It is situated on the bank of the Dnieper River near the village of Gnëzdovo, some 12 km west of the city of Smolensk, which lies 378 km southwest of Moscow. It is one of the most important medieval sites in Russia.<sup>1</sup> The population of the settlement consisted mainly of Scandinavians and Slavs. Among them there were artisans, e.g., smiths, jewelers, potters and bone-carvers, warriors and merchants. Ethnic and social attribution of the persons buried in the Gnëzdovo barrows is based on the analysis of mortuary practices and grave goods. In the Gnëzdovo barrows cremations prevail over inhumations. Textile remains have been encountered and recorded in 12 of the total of 116 excavated inhumations. The overall majority of these finds are minute fragments having survived owing to contact with metal. The only exception is the discovery of a bundle of fabrics in a burial excavated by the Smolensk archaeological expedition of Moscow State University in 1982. The materials of the burial were included in a publication dealing with the three most interesting chamber tombs of Gnëzdovo known by the late 1980s (Avdusin and Pushkina 1989, 190-205), while fabrics from the site were studied partially in M.V. Fechner's work (Fechner 1999, 8-10). It is worthwhile to describe once more the barrow burial II-301 in connection with new finds from the cemeteries of Kiev and Pskov where chamber burials have been found whose rites and grave goods are similar to those of Gnëzdovo (see Mikhailov in ATN 47), and to outline the characteristics of textiles found in it.

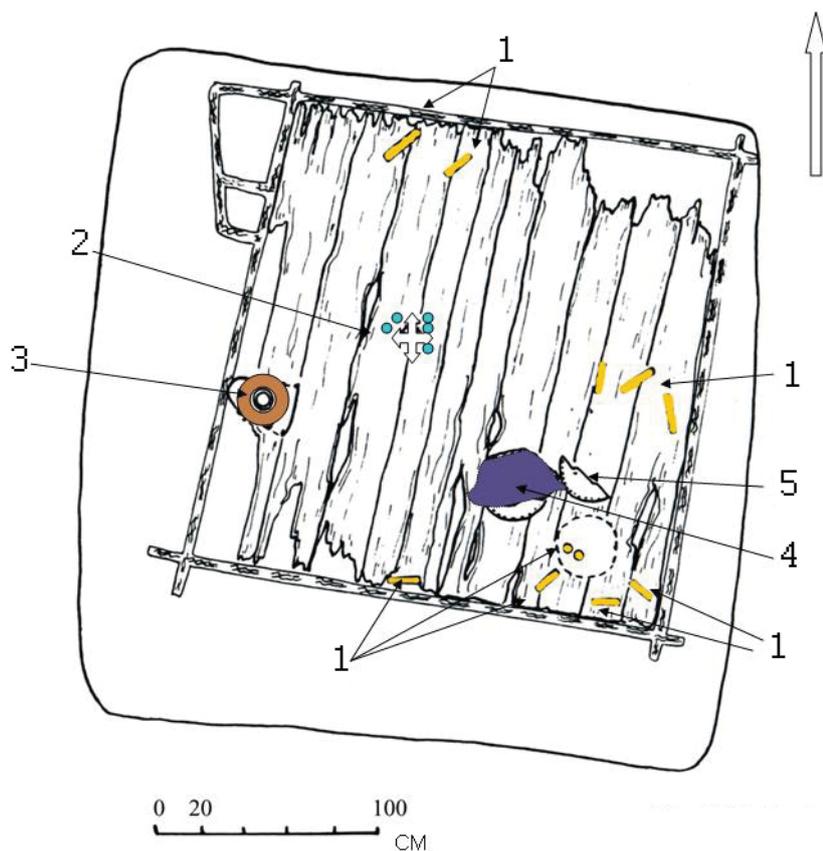
Barrow II-301 was situated on the southern boundary of the Central Barrow Group of the Gnëzdovo site. The barrow was a low, slightly eroded sand mound, circular in plan, with a small hollow on the top. The latter was taken at first for a trace of a 19th-century excavation pit. The barrow mound covered a rectangular pit measuring 3 x 3 x 0.8 m which was dug after scorching the earth or burning a small fire. Remains of a dovetailed timber structure measuring 2.3 x 2.25 m were revealed on the bottom of the pit. An uninterrupted layer of wood decay up to 0.1 m wide was traced along the contour of the walls to the height of 0.3 m. The structure was probably even higher since separate areas of wood decay were recorded in the upper layers of the pit filling. It was apparently covered with wooden planking, in a north-south orientation. Planks are 0.1-0.2 m wide and up to 0.03 m thick. The better preserved flooring of the chamber was completely uncovered. It consisted of planks 0.15-0.25 m wide and up to 0.05 m thick placed directly on the virgin-soil bottom of the pit (Fig. 1). The chamber floor had been seemingly covered with birch-bark whose remains were traced in the northern part of the structure. Scattered beads (50 items), a cross-shaped pendant cut of sheet silver with *poinçoné* decoration, and a fragment of a bronze equal-armed brooch in a very bad state of preservation were lying on the floor almost at the centre of the chamber. Southwest of the necklace remains, near the west wall of the timber structure, there were the handle, iron hoops and loops of a truncated-cone-shaped wooden bucket lying on its side, and a small wheel-thrown pot with a linear decorative pattern. The remains of two birch-bark



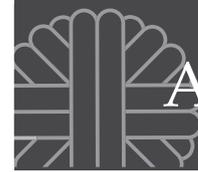
discs, one whole and one half, measuring 27 cm in diameter, lay to the southeast of the jewellery. The discs are displaced with respect to one other, and both have small holes along their edges, as if for attaching the cloth walls, resulting in a combination-material box. The halved disc was partially covering the fabric bundle put in the box. The upper layer of the bundle was visually identified during the excavation as a coarse wool fabric. Inside the bundle, there were fragments of an oval bronze brooch and an imprint of a small round cup, probably of wood. Near the bundle but somewhat nearer to the south-east corner of the burial chamber, there were two wax candles standing vertically almost to the height of 0.05 m over the upper planking. Judging from a very thin ring of wood decay some 25 cm in diameter traced around the candles, they were originally placed in a hollowed out wooden vessel. Nine additional candles, either intact or broken, were found on the floor in the eastern part of the timber structure. The majority of candles had a melted end. The burial was identified as a female one of Scandinavian type, with the corpse in a sitting position, and was dated to the 970s AD (Avdusin and Pushkina 1989, 200, 203).

### Methodology

- Microscopy in non-polarized light (МБС-10) with 10x to 40x lenses was used to determine the structure of fabrics and plaited articles.
- Optic microscopy in reflected and transmitted polarized light (ПОЛАМ-Р-212) with 100x to 400x lenses was used to determine the nature of textile fibres. Permanent immersion preparations in Canada balsam were made for the purpose.
- Organic base of gilt threads was studied by histochemical, microchemical and microscopic methods. Investigations were carried out by O. Lantratova, leading research fellow of the Restoration Department of the State Historical Museum (Moscow).
- Textile dyes were analysed by E. Karpova at the N.N. Vorozhtsov Novosibirsk Institute of Organic Chemistry using high performance liquid chromatography (HPLC), in extractions of mixture ethanol:water:complex DTPA and dimethylformamid.
- The chemical composition of metal was defined by means of remote X-ray-fluorescent method with the aid of ArtTAX device (Röntgenanalysen-Technik). The analyses were carried out by N. Eniova at the



**Fig. 1. Plan of II-301 burial at Gnëzdovo – 1982:**  
**1: candles**  
**2: necklace with cross**  
**3: bucket and pot**  
**4: textile bundle**  
**5: fragments of two birch-bark discs.**



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### Material

Investigation included the following: fragments of Dress 1, fragments of Dress 2, fragments of silk fabric, fragments of linen dress, fragments of sprang, and fragments of wool fabric.

### Dress 1

Dress fragments were restored by A. Elkina, the restorer of the Russian Research Institute of Restoration, so by the time of analysis we had to deal with washed, smoothed out items, which were reinforced with white thread. The drawings enabled us to reconstruct the main outline of the dress (Fig. 2). It is a tunic-shaped waisted gown with widening skirt and long sleeves with cuffs. A collar fragment 8 cm high has survived on its back. Its width with sleeves is slightly over 2 m.<sup>2</sup> The full length of the dress cannot be determined; the maximum length of the surviving part is 89 cm. The dress is made from a fabric with a decorative pattern embroidered with gilt threads. The main pattern is placed on front and back parts above the waist while the skirt bears patterned horizontal stripes. Similar stripes run along the sleeves. The entire right sleeve consisting of two parts measuring 40 and 20 cm respectively has survived. As to the left sleeve, its surviving part measures 50 cm in length. A deep pleat is visible on the back. Collar and cuffs were cut from undecorated parts of fabric. A small inner fold divides the collar in two parts in the proportion of 1:2.

While the reconstruction of the back is secure, that of the front part is not straightforward. The major issue is the shape of the neck. A surviving fragment of its left piece measuring 12 cm ran along the central axis of the article, at a distance of 12.5 cm from the shoulder line. Fabric, slightly folded at this place, bears traces of a seam, which is indicative of a lined selvedge. The bottom part is fully spread and has punctured holes along the line of fold. It enables us to surmise that the dress had a vertical slit at the centre going down for some 24-25 cm from the shoulder line. It is worth noting, however, that fragments of the garment were restored and any folds smoothed out. It is therefore not inconceivable that the garment could either have been worn open or have an additional flap on the right side.

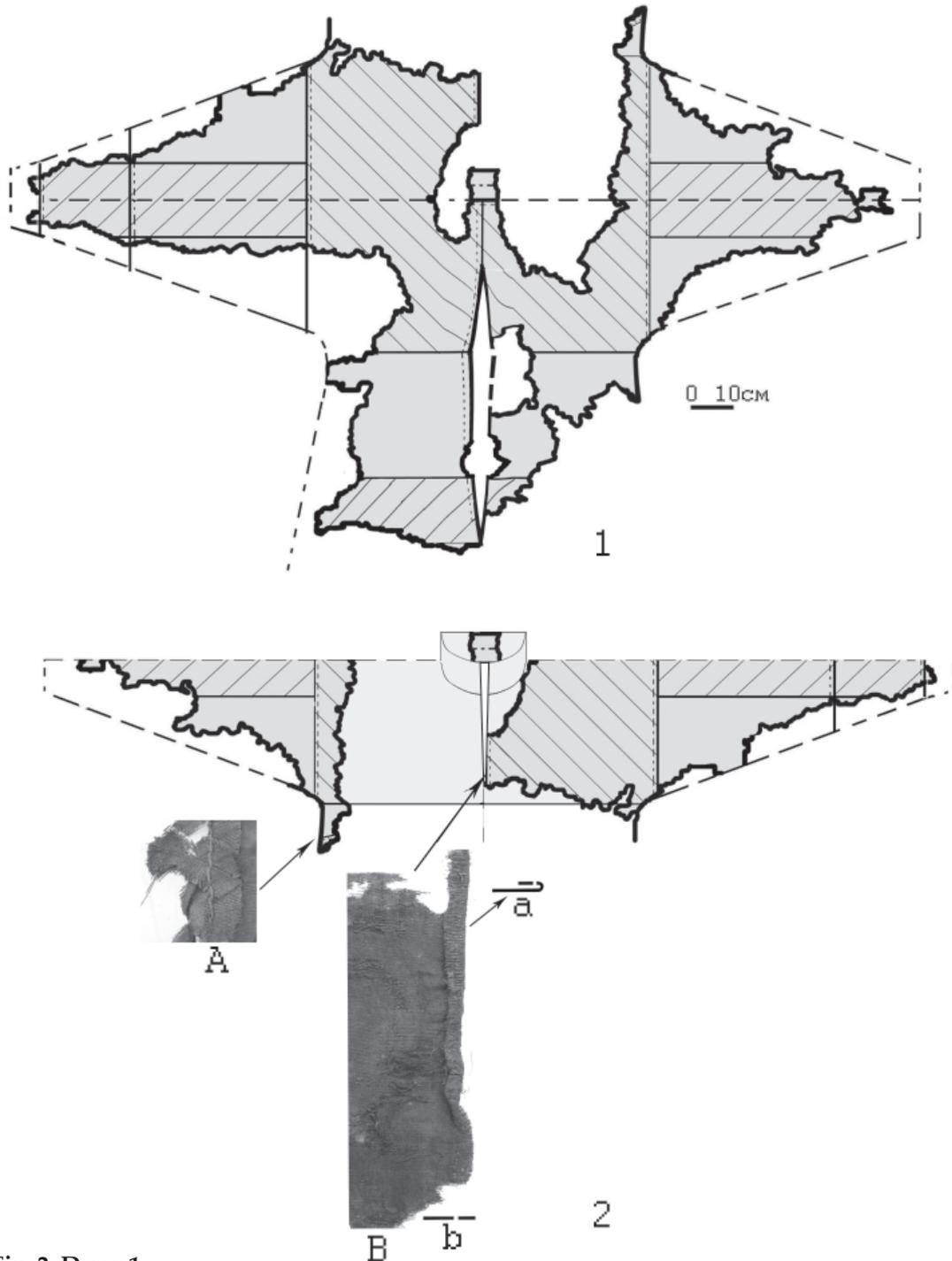
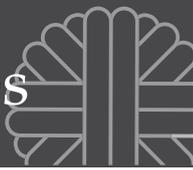
The right flap has a seam running across it at a slight angle to the horizontal line below the sleeve and slightly below the main decorative pattern. The surviving part of the seam measures 2 cm, which does not permit us to reconstruct the juncture line

with certainty.

A small fragment of the same fabric without decorative pattern (13 x 10 cm) has a tucked selvedge and remnants of a hidden seam, 7 cm from the edge; it is indicative of a closed vertical edge of a lined article. The fragment bears no decoration, so it was situated either above or below the narrow decorative stripe. It has a selvedge, so it cannot be a slit at the centre of a weaving piece. Having analyzed several alternatives, we chose the most obvious explanation: the fragment is a part of a side vent. We hence conclude that the gown was long, had two decorated stripes on the skirt and side vents (Fig. 3). The surviving parts of the hidden seam on the fragments under consideration and on the sleeves imply that the article was lined; the lining covered the reverse side completely but did not survive.

The decorative pattern is distributed top to bottom as follows: the area with the main decoration is 75 cm wide, then there is an area without decoration 33 cm wide, followed by a decorated area 18 cm wide, after which the surviving cloth ends. The main image is placed symmetrically along the vertical axis of the cloth. The composition is arranged around a disc, which can be regarded as a celestial body, either the moon or the sun, or as a big pearl. The most visible figure is that of a sitting griffin, a mythical beast with the head and wings of a bird of prey and the body of a lion. A scaled 'stripe' runs near its jaws; it is probably a part of the body of another mythical creature, a dragon. The dragon disappears in the clouds above the griffin, and reappears on the other side of the disc. The head of the dragon is depicted showing its mouth, an ear, a horn and 'hair' behind the ears. Other parts of the head cannot be identified with certainty. Thus, the fabric design features the sitting griffin probably holding a paw of the dragon flying into the clouds (Fig. 4). The griffin has characteristic Mediterranean traits while the dragon is typical of China. The amalgamation of the two traditions is only natural since the adoption of occidental ornamental motifs by Chinese silk weavers began already in the first centuries of the Common Era (Lubo-Lesnichenko 1994, 189-211; Liu 1996, 18). The decorated stripe consists of five narrower bands: two composed of figurative festoons, two narrow and plain, and a central band bearing floral decoration (Fig. 5).

It seems likely that the same pattern was used in decoration of a Chinese gown of the Yuan period (Fig. 6), where the bodice is covered with a pattern featuring dragons down to the waist, while decorated stripes run over the skirt and along the sleeves (Feng and Lin 2005, 219). A stripe some 20 cm wide runs



**Fig. 2. Dress 1**  
 1. Drawing of surviving fragments and reconstruction of dress cut.  
 2. Reconstruction of the front part of dress.  
 A. Fabric section with seam running across right flap.  
 B. Fabric section along the line of central vent.  
 a. Tucked selvage bearing holes punctured with needle;  
 b. Unfolded selvage with holes running along the line continuing that of tucking of the upper part the selvage.  
 (Photo: Authors).

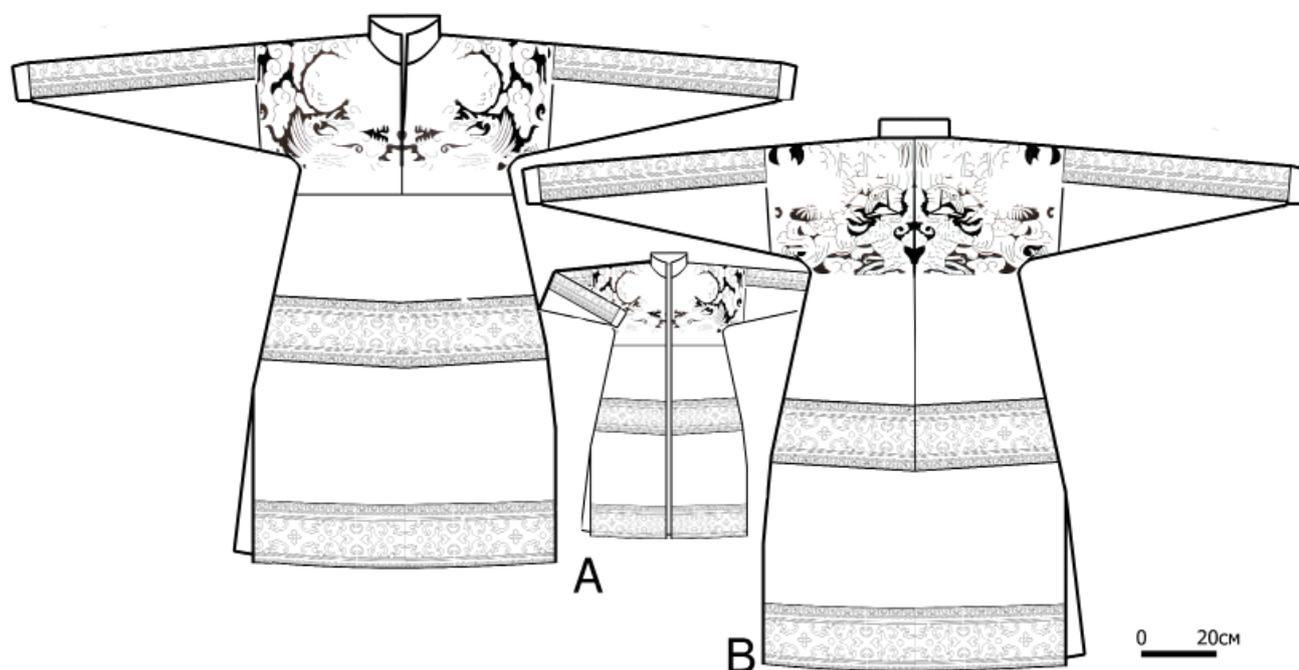
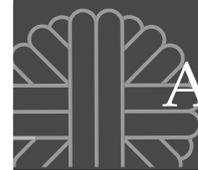


Fig. 3. Alternative reconstructions of dress: A – Two variants of front view; B – Back view.

over the shoulders of many surviving Mongolian gowns of the 13th century AD. Usually such a stripe bears decoration featuring a pseudo-Kufic inscription. The original style called 'intertwined Kufic' was elaborated in eastern provinces of Iran in the 11th century AD (Folsach 1993, 45). A study of a female gown from the Marjani collection has shown that a cloth piece with starting and finishing border<sup>3</sup> was used to make the garment. The stripe with a pseudo-Kufic inscription runs at 10 cm from the end of the woven piece. It can be surmised that a similar stripe on the 10th-century AD garment under study was wider and illustrated a particular story. In this case the wide stripe showing the dragon and the griffin would have been placed at the end of the weave. Therefore a horizontal seam whose remains have survived on the left flap would have run somewhere near the waist on the front of the gown. With this assumption, all narrow decorative stripes would have been spaced evenly. Then, if there were two of them on the skirt, the gown was approximately 1.40 m long (Fig. 7).

Structurally the cloth of the gown belongs to the fabrics with additional stripes of gilt weft introduced in the ground weave. Gilt threads cover the background of the main decorative design almost completely. The image is outlined by thin threads of the warp-faced weave. The distribution of ground and supplementary threads in the decorative stripe is approximately even.



Fig. 4. Partial reconstruction of large stripe of decorative pattern.

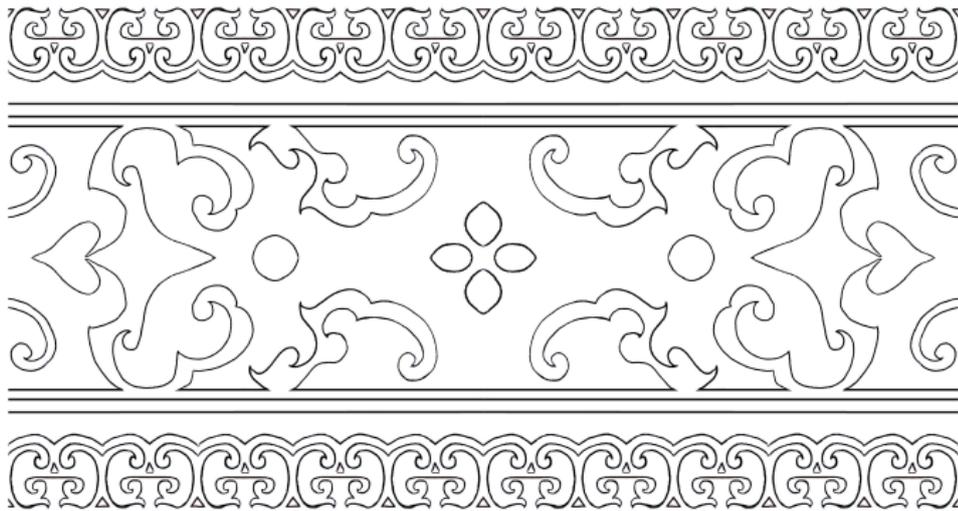
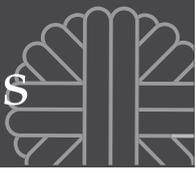


Fig. 5. Drawing of narrow decorated stripe.



Fig. 6. Mongolian noblewoman (After Silk 2005, 219).

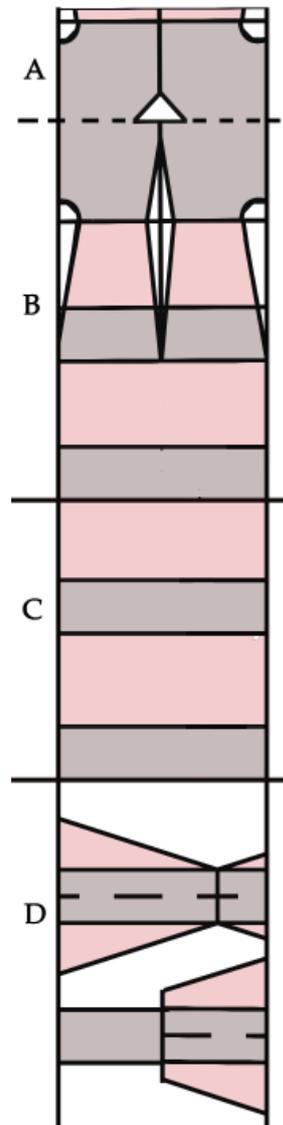
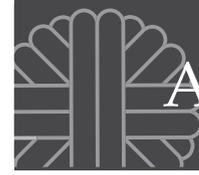


Fig. 7. Reconstruction of apportionment of dress cut on fabric. Fabric width 80 cm, length 4 m.  
A: front  
B: back  
C: front part of skirt  
D: sleeves.



**Technical analysis of the Dress 1 fabric** (Fig. 8)

**Warp:** red silk, single, z-twisted, 0.1-0.3 mm thick.

**Décochement:** 2 ground warps. Thread count: 40 threads/cm.

**Weft:** Ground: red silk, without twist, 0.3-0.5 mm thick. Thickness of threads is uneven, at some places weft threads are up to 0.8 mm thick. Supplementary: gold thread composed of gilt strips of serous membrane of animal intestines (thin and somewhat translucent) Z-wrapped around a yellow silk core, z-twisted. The diameter of the thread measures 0.3-0.5 mm, gilt strip is 0.5-0.6 mm wide. Threads function in pairs. Proportion: 2 ground threads/a pair of supplementary weft threads. Pick: 1 ground weft, a pair of supplementary weft threads, 1 ground weft. Thread count: 18 threads of ground and 9 paired threads of supplementary weft per cm.

**Weave:** weft-patterned. Ground: tabby.

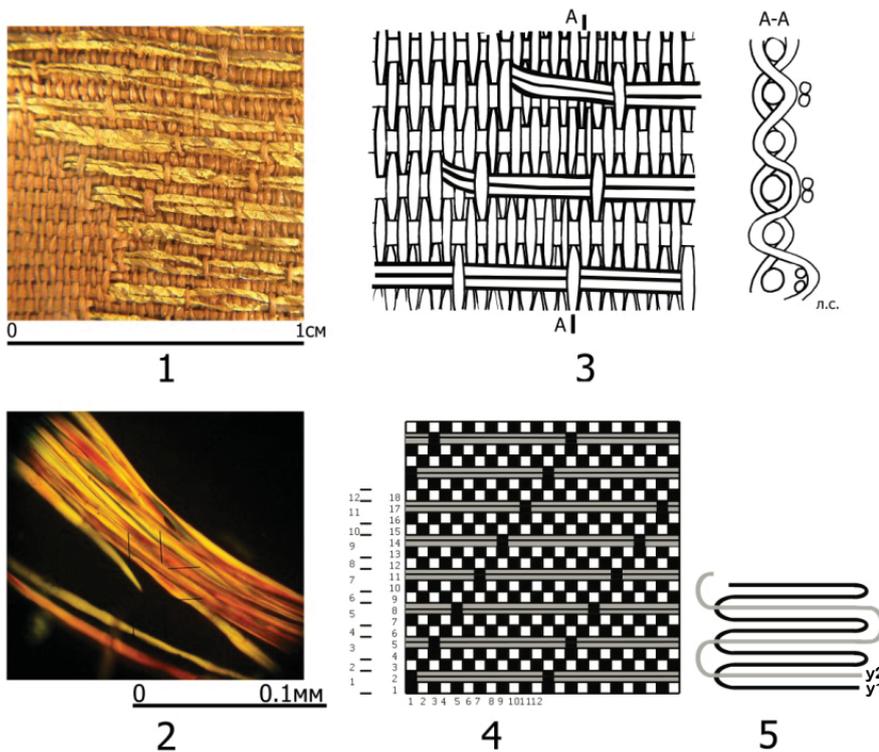
Supplementary: weave of even warp threads with the supplementary weft 1/5 Z twill (gold wefts bound in pairs). Gilt threads are not fastened on the reverse side. Selvedges: weft threads were cut along the edge of the piece yet some gilt threads were left uncut (loops). The selvedge, equipped with loops and fringe, implies that the width of the fabric on the loom was regulated by the outer thick threads of the warp, removed after the fabric was taken out from the loom. A thin stripe of gilt threads runs along the

selvedge on the patterned areas. The same technique and design can be seen on 13th-century AD brocade fabrics, for instance, those from the Maiachnyi Bugor II cemetery (kept in the State Historical Museum, Moscow; see *ATN* 52).

Silk warp and weft threads are red. The fibre was dyed with madder before being spun. The cloth contained 74 % of alizarin, 24 % of purpurin and 0.8 % of anthragallol. Thus, the original colour of the fabric was red with a warm orange tint. The core of gilt threads was left undyed.

**The provenance of the fabric from Dress 1**

In the 10th century AD, silk fabrics could have been manufactured in China, India, Central Asia, Asia Minor, Iran and Byzantium (Liu 1996, 20-22, 124). Different gilt threads, however, were used for brocades in different regions, and their characteristics have been used as a guideline in attribution of provenance to fabrics (Falke 1921, 50-57). Thus, fabrics with gilt threads of serous membrane of animal intestines do not appear in the West before the 11th century AD (Sobolev 1934, 53-54; Fekhnner 1982, 64; Blanco 1998, 20), therefore the cloth under study could not have been manufactured in Byzantium. Persian brocades<sup>4</sup> (Owen-Crocker 1986, 187) could have reached northern Europe at that time. It is believed, however, that it was not pure gold but gilt

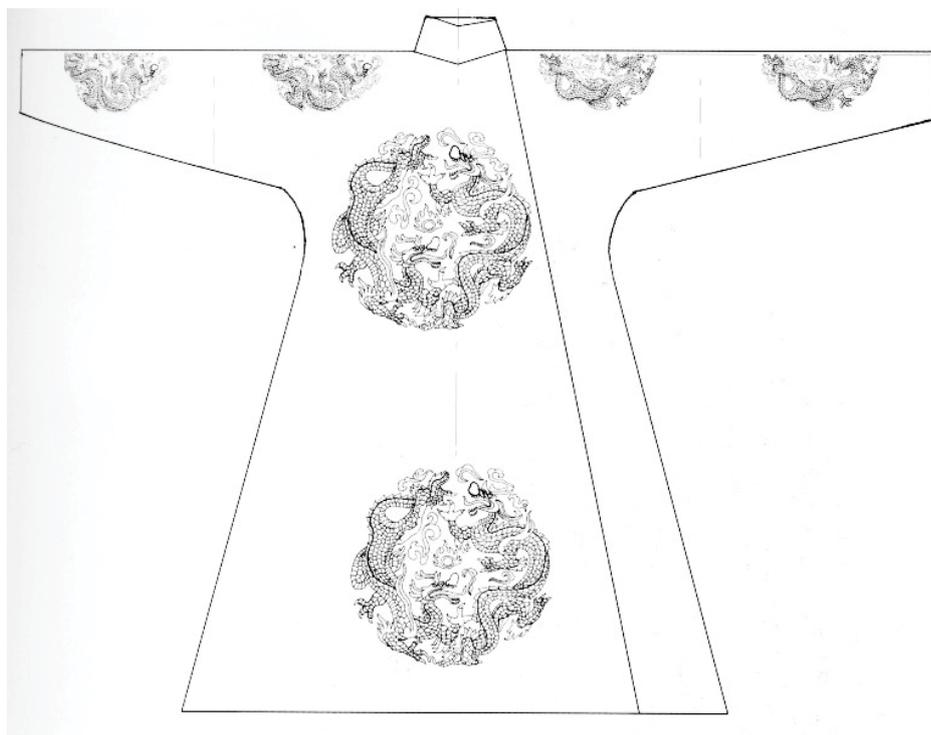


**Fig. 8. Brocade fabric of Dress 1**  
1: Microphotograph of fabric (right side).

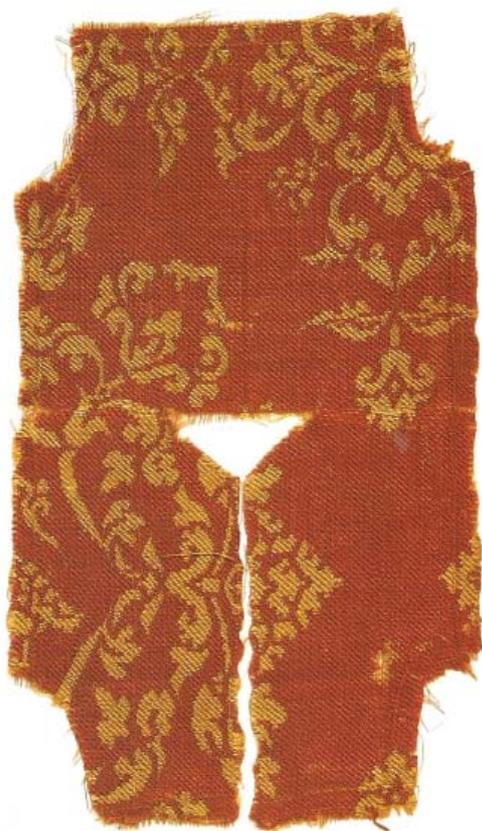
2: Microphotograph of silk fibres.

3 and 4: Diagram of twills; A-A – section towards warp threads.

5: Diagram of passées; 1 – gilt threads; 2 – silk weft threads. (Photo: Authors).



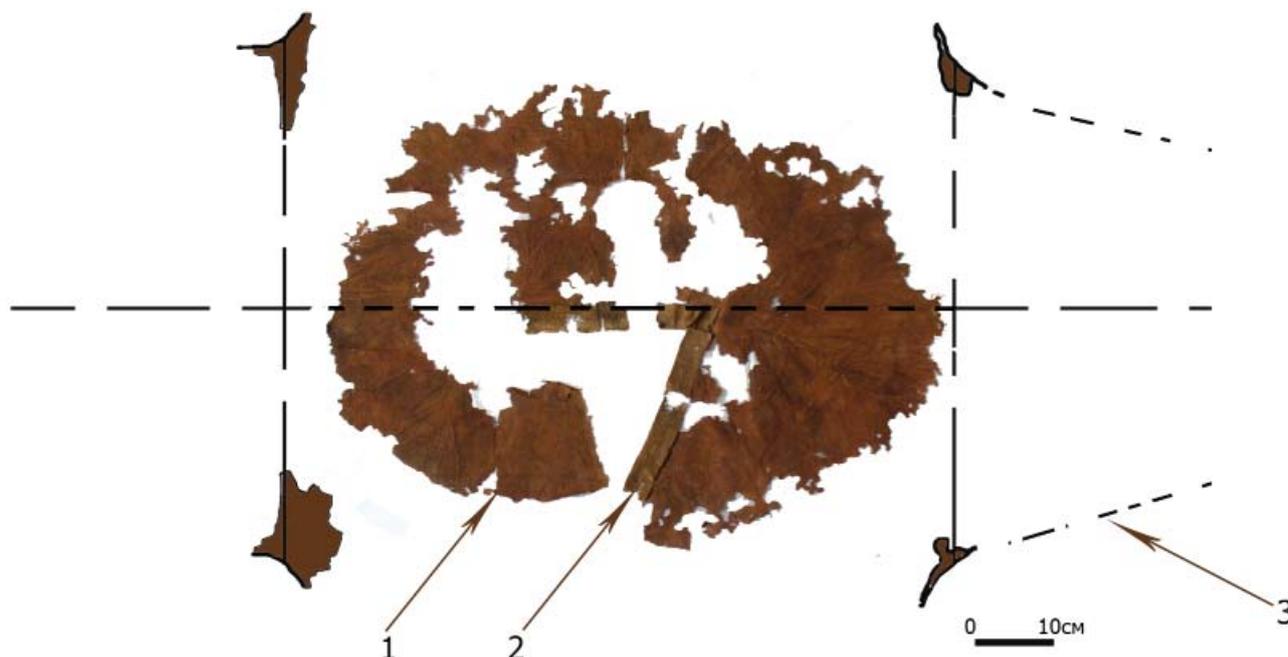
**Fig. 9.** Drawing of wraparound dress of the Liao dynasty (After Rossi and Rossi 2004, 17).



**Fig.10.** Fragment of doll dress from the Astana cemetery (After Min 2006, 224 Fig. 160).

silver or other alloys that were used for making gilt threads in Iran (Bolshakov 2001, 259-260; Watt 1997, 127-141; Wardwell 1992, 371), while the use of pure gold was typical for China (Wardwell 1992, 371; Jinke 2006, 129-145; Lantratova *et al.* 2002, 245-249). Besides metal composition, the core thread used to wrap the gilt strip around is an important characteristic of gilt threads. Thus, cotton thread could have been used for this purpose in Iran in the 7th-8th centuries AD (Lubo-Lesnichenko 1994, 202). However, this criterion cannot be used as a basic guideline for lack of information on the other centres of production. It is agreed that the *broché* (brocaded) and *lancé* (weft-patterned) techniques originated from China (Jonghe 1991, 100). To sum up, based on its technical characteristics, it can be surmised that the cloth was manufactured in North China.

The question of the place of making of the garment is no less intriguing. A search for analogies in the Chinese archaeological record led us to four gowns of the 8th-12th centuries AD (Rossi and Rossi 2004, 12-14; Zheng 2007, 98; Feng 2007, 99). Their outline is close to that of the garment (Fig. 9), yet they are unfastened wrap-around garments. A fragment of a doll's garment from Astana (Fig. 10) dated to the 9th century AD is also of prime interest in this connection (Min 2006, 224, Fig. 160). We have also succeeded in finding a triangular-necked non-wrap-around shirt-waist gown, although it is a more recent type



**Fig. 11.** Surviving fragments of Dress 2. 1: main fabric; 2: trimming fabric; 3: supposed outline of dress cut (Photo: Authors).

(Gold 2005, 57). All the above comparisons enable us to surmise that the garment under study was made in China. However, non-wrap-around tunic-shaped 'oriental' form of garment with a flared outline was characteristic of contemporaneous Iran and Byzantium as well (Norris 1999, 151, 259, 267, 274). Therefore, the possibility of the garment having been made from a Chinese cloth in Iran or the Byzantine Empire cannot be ruled out. Brocade garments from Byzantium are mentioned in Scandinavian literature of the 10th century AD (Krag 2007, 241). The garment is unlikely to have been made from a whole piece of brocade fabric in northwest Europe.

### Dress 2

Only a few fragments of the second red-fabric garment have survived in good condition. The two largest pieces can be recombined into a bodice with a pronounced neckline (Fig. 11). There are small fragments of side seams connecting the bodice with sleeves, hence the conclusion that the garment had sleeves. A V-shaped neck is marked with a cloth strip 3 cm wide with a minute design. Lining fabric has survived on the reverse side.

The decorative pattern on the main fabric was probably embroidered with flat gilt threads, of which only traces of gilding have survived. Small holes of gilt threads are indicative of a complex design. Sadly, we have not succeeded in reconstructing it.

### Technical analysis of the Dress 2 fabric (Fig. 12)

*Warp:* red silk, z-twist, single and paired, single threads are 0.1-0.2 mm thick. *Décochement:* unidentified. Thread count: 40 threads/cm. *Weft:* Ground: red silk, without twist; 0.4-0.6 mm thick. Supplementary: did not survive. The analysis of metal has shown that there is an admixture of lead in gold. Combination of wefts and the sequence of pick cannot be identified. Thread count: 18 ground weft threads/cm.

*Weave:* weft-patterned. Ground: lousine/extended tabby. Supplementary: unidentified. Warp threads are distributed as follows: two paired threads, two single; two paired, two single, etc. Selvedges: 16 side threads of the warp consist of four threads each. In one of the selvedges two thick threads on the border with the main cloth consist of 6 threads each. Weft threads turn along the edge of the cloth. Gilt threads probably turned before reaching the selvedge. The material was dyed with madder in the hank. The ratio of alizarin (78 %) and purpurin (19 %) is similar to that of the Dress 1 fabric. The decorative stripe is 3 cm wide. We succeeded in partially reconstructing the design.

### Technical analysis of the trim of Dress 2

*Warp:* red silk, weak z-twist, paired, the single thread is 0.1 mm thick. *Décochement:* 2 paired ground warps. Thread count: 46 threads/cm.

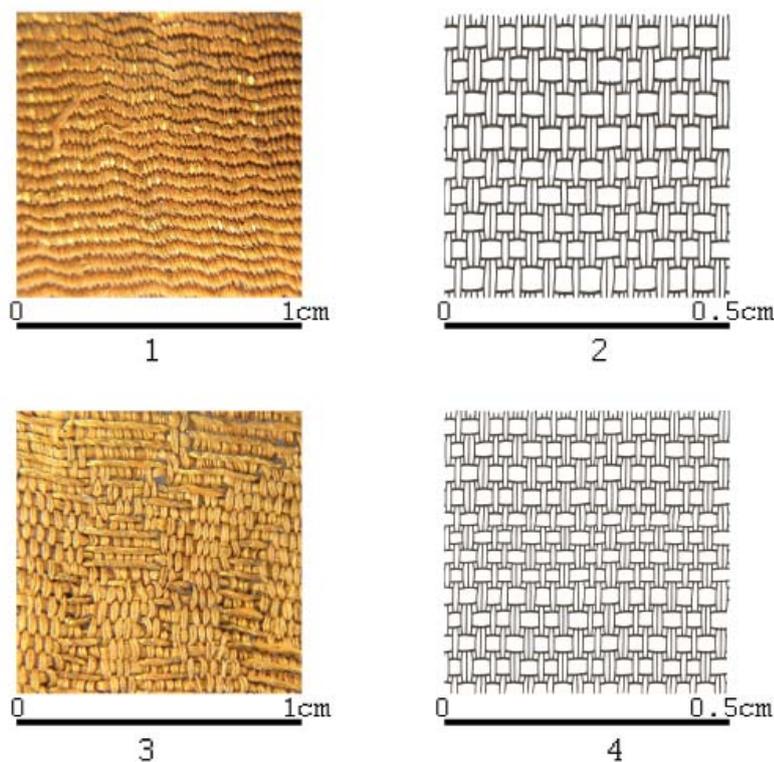


Fig. 12. Fabrics of Dress 2

- 1: Microphotograph of brocade fabric of Dress 2
- 2: Diagram of ground twill (threads of supplementary weft are lost but traces of gilt survived on remaining threads.)
- 3: Microphotograph of trimming fabric
- 4: Diagram of trimming fabric twill (Photo: Authors).

*Weft:* Ground: red silk, without twist; 0.4 mm thick. Thickness of threads is uneven, at some places weft threads are up to 0.8 mm thick. Supplementary: gold thread composed of gilt strips of serous membrane of animal intestines Z-wrapped around a yellow silk core, z-twisted. The diameter of the thread measures 0.2-0.4 mm, gilt strip is 0.6-0.7 mm wide. The metal thread coat shows a small admixture of copper and bromine resulting from remelting. Threads are single. Proportion: 1 ground weft, 1 supplementary weft. Pick: 1 ground weft, 1 supplementary weft. Thread count: 18 threads of ground and supplementary weft per cm.

*Weave:* weft-patterned. Ground: tabby. Supplementary: unidentified. Gilt threads have no additional fastening on the areas with minuscule design.

At present the fabric is brown but dye analysis has shown that it had been red and contained less alizarin (53 %) and more purpurin (36 %) than the main cloth. Consequently, the trim fabric was of more intense scarlet colour than the main fabric of Dress 2.

#### **Technical analysis of the lining of Dress 2**

*Warp:* light brown silk, weak z-twist, paired, single and paired threads, the single thread is 0.1-0.2 mm thick. Thread count: 48 threads/cm.

*Weft:* light brown silk, without twist; 0.2-0.3 mm

thick. Thread count: 26 weft threads/cm.

*Weave:* louisine/extended tabby. Combination of warps is similar to that of the main fabric of this garment: two paired and two single threads. The weave of the lining cloth has much in common with the ground weave of Dress 2. It is the similarity of the two different fabrics that enables one to surmise that both fabrics were manufactured at the same centre, having its own mechanism of securing threads on the loom. And since two fabrics of the same provenance are combined to form a single garment, it seems likely that the article in question was made not far from the place of manufacture of these fabrics.

#### **The silk fabric 'with discs'**

The fabric survives in two fragments. A decorative pattern in the shape of discs positioned at a distance of 9.5 cm from each other has survived on the larger fragment (8 x 23 cm). Flowers forming a 'tree of life' are depicted within the discs.

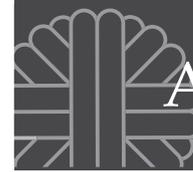
#### **Technical analysis of the fabric 'with discs' (Fig. 13)**

*Warp:* red silk, weak z-twist, single, 0.1 mm thick.

*Décochement:* 2 warps. Thread count: 32 threads/cm.

*Weft:* red silk, without twist; 0.3-0.6 mm thick.

Thickness of threads is uneven; it depends on the presence or absence of design in stripes.



Supplementary: gold thread is composed of gilt strips of serous membrane of animal intestines (thin and somewhat translucent) Z-wrapped around a yellow silk core, z-twisted. The diameter of the thread measures 0.2-0.3 mm, gilt strip is 0.5-0.6 mm wide. Threads are single. Proportion: 1 ground weft/1 supplementary weft. Pick: 1 ground weft, 1 supplementary weft. Thread count: 18 threads/cm. *Weave*: brocaded on tabby. Selvedge: 8 warp threads are thinned out. Weft threads were cut along the edge.

It is impossible to reconstruct the garment to which the two above-mentioned fragments belonged. The fragments were washed and smoothed out and there are no traces of seams. If there was no sewing along the edge, the cloth could have been used as a shawl, scarf or veil.

### The linen dress

Fragments of a linen cloth belong to a single garment made from undyed and dyed blue fabrics. All pieces were washed and partially smoothed out, which made them less informative. In the course of the analysis linen fragments were divided into groups according to their shape and type of fabric. Fragments of the first group are narrow stripes of a fine blue cloth with torn off ends and traces of numerous folds (Fig. 14). The overall length of the surviving fragments measures over 2 m along the weft.<sup>5</sup> Judging from a fragment measuring 50 cm in length up to the selvedge, the textile was at least 50 cm wide. Traces of folds are unevenly distributed. The second group is formed by two fragments belonging to two fabrics, a thick light and a fine blue one, sewn together (Fig. 15), with the thread

passing through folded edges of the fabrics. Folds strengthened with additional seams were made on the fine cloth. The fragments show that the folds on the fine cloth are distributed unevenly along the line of joint with the undyed coarse fabric. It seems likely that these are fragments of the waist-part of the gown while the fragments of the first group belong to the skirt.

A fragment of an undyed thick cloth probably belongs to the neck-part (Group 3). It has folds on one side and several seams. Two more layers of a similar cloth are sewn on the main fabric in the lower part of the fragment; these were probably patches (Fig. 16). The interpretation of this fragment is, however, debatable. The bow-shaped seam-line and the fact that the outer layer of the cloth is folded on the face cannot be explained. Remains of blue threads, probably of a blue-fabric bolster which underlined the edge of the cloth, have survived along the upper edge of the fragment with folds. A similar treatment of the neck is recorded for a linen gown from Pskov (Zubkova *et al.* 2009, 293-300).

Group 4 includes fragments of the fine cloth not showing blue colour. The lack of colour may be accounted for by the fading of the dye due to the low quality of cloth dyeing. Fragments belonging to this group are generally torn off on all sides, yet one of them has a clear slanting cut. Such a cut could have been encountered on the bodice if the outline of the gown was similar to that of Dress 1, on the skirt if it had gores, or on tapering sleeves.

The data available are not sufficient for an unambiguous reconstruction of the linen gown. We suggest the following provisional reconstruction. The gown is a shirt-waister with the junction either

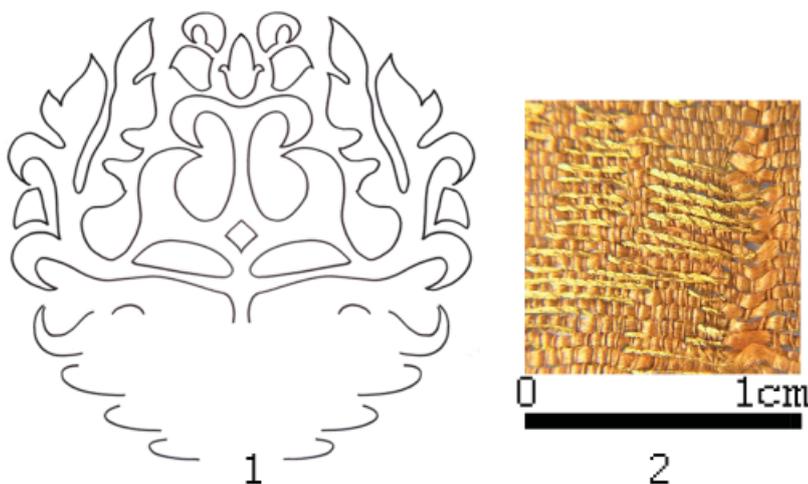


Fig. 13. Fabric with discs  
1: Drawing of decorative pattern  
2: Microphotograph of fabric (right side) (Photo: Authors).

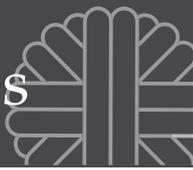


Fig. 14. Fragments of linen dress, Group 1 (Photo: Authors).



Fig. 15. Fragment sewn together of two fabrics, Group 2 (Photo: Authors).

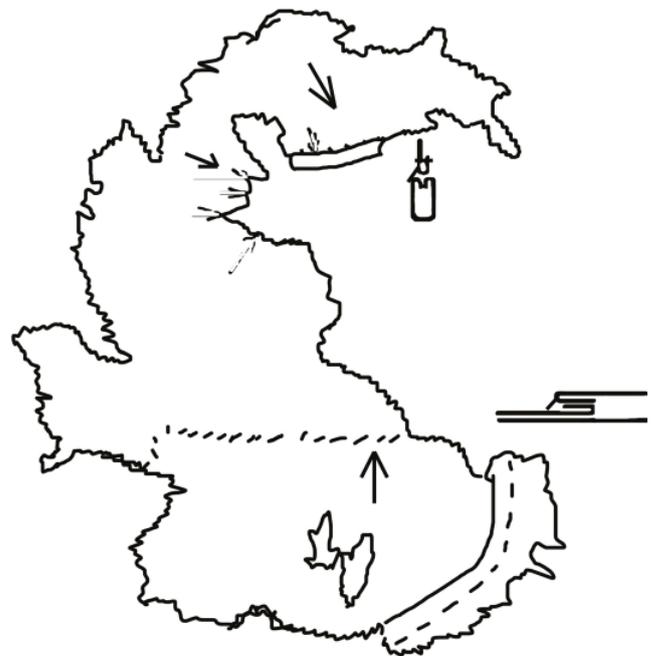
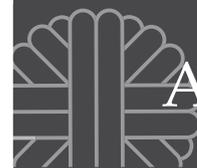


Fig. 16. Drawing of dress fragment, Group 3.



at the waistline or somewhat lower. Its upper part is light-coloured and the lower one is blue. The skirt is made from several, at least four, pieces of cloth made into small folds unevenly distributed along the joint of skirt and bodice. Probably the main folds were concentrated on the sides. The sleeves were seemingly long and made from a fine blue fabric. The collar was folded into pleats and sewn onto a bolster of a fine blue cloth. Based on the dimensions of the neck cut in a straight line (35 cm along weft threads to one side), the gown had shoulder pieces. The use of fabrics of different quality implies that the upper part of the gown made from inferior-quality cloth was covered with another garment, allowing only the blue skirt and, possibly, the sleeves to be seen.

**Description of tabby fabrics** (Fig. 17)

The thick fabric.

*Warp*: undyed linen, z-twist, single, 0.2-1 mm thick.

Thread count: 8 threads/cm.

*Weft*: undyed linen, z-twist, single, 0.2-1 mm thick.

Thread count: 8 threads/cm.

Warp and weft threads show a wide scatter of thickness and an uneven *décochement* of the twist.

Linen raw material is of poor quality; there are hard remains of plant stems in the threads.

The fine fabric:

*Warp*: blue linen, z-twist, single, 0.2-0.5 mm thick.

Thread count: 16 threads/cm.

*Weft*: blue linen, z-twist, single, 0.2-0.5 mm thick.

Thread count: 12 threads/cm.

The finished fabric was dyed with indigo, a blue vat dye. The thickness of threads and the degree of twist are uneven, yet the quality of threads is higher than that of the thick fabric.

No complete 10th-century AD linen gowns have been found so far, but a comparison of the fragments of the two 10th-century AD gowns, one from Pskov (Zubkova *et al.* 2010, 293-300) and another from Gnëzdovo is given in Table 1.

Female shirt-waisters made from two types of fabrics and dated to the 13th century AD were found at Toropets and Iziaslavl in Russia (Saburova 1987, 102, Table 86).

**Samite silk fabric**

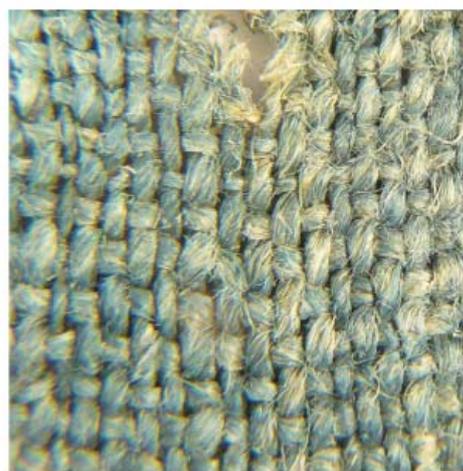
Samite fragments are narrow strips some 5.5 cm wide. One side of a strip is folded, while the other is hemmed with an edging of the same cloth. A similar treatment of strips was recorded for the trim of a linen article from a chamber burial in Pskov (Zubkova *et al.* 2010, 161).

Samite: 1/2 twill S. The ratio of the main to binding warp is 2:1. There are at least two weft threads, one of which is either blue or green.



0 1cm

1



0 1cm

2

Fig. 17. Microphotographs of linen fabrics. 1: thick fabric; 2: fine fabric (Photo: Authors).



### Sprang

Two small fragments have survived. The article was made from linen threads (S2z-twist, 1 mm thick) in sprang technique (Fig. 18).

Excavated fragments of sprang have been encountered in Scandinavia on the sites dated as early as the Bronze Age. The technique was used mainly to make female headdresses. The fragments in question are, however, so small that it is impossible to say what article they belonged to.

### A fragment of a wool fabric

2/2 twill Z (Fig. 19). A brown cloth is made from wool threads of uneven thickness and z-twist. The average thread count is 14/12 threads/cm.

### Summary

Our analysis suggests that the box from Burial II-301 contained three garments made from Chinese brocades. Two of them were probably gowns of Chinese manufacture, though they could have been made from Chinese cloth in Iran or the Byzantine

Characteristics	A gown from Burial 3 Π-06-СтВ3IV, Pskov	A gown from Burial II-301, Gnëzdovo
<b>Fibre nature</b>	flax	flax
<b>Weave</b>	Tabby	Tabby
<b>Thread count</b>	18/14 threads/cm	Fine fabric – 16/12 threads/cm Thick fabric – 8/8 threads/cm
<b>Width of piece</b>	Probably 40 cm; a seam joining two sheets runs at the centre of bodice	Fine fabric – no less than 50 cm. Thick fabric – if a piece was cut along the central axis, the sheet was at least 70 cm wide.
<b>Blue dyeing</b>	Dyeing in the cloth	Fine fabric – dyeing in the cloth Thick fabric – undyed
<b>Collar design</b>	Folds and a sewn-on cord. There is a central slit (selvage). The neck was tied up with the cord The gown probably had shoulder-pieces.	Folds and a sewn-on cord. A central slit, probably without selvage, no fastening is recorded. The gown probably had shoulder-pieces.
<b>Length of sleeves</b>	No data	No data
<b>Overall length</b>	No data	No data
<b>Shape</b>	No data	Shirt-waister, with a skirt widening owing to pleats
<b>Silk trim</b>	Probably silk cuffs and a trimming strip along the hem 4.5 cm wide. Remains of a blue linen cloth have survived on the reverse side of silk fabrics.	An isolated strip of silk trim 5.5 wide was found.
<b>Sewing quality</b>	High (judging from the neckline)	Low (judging from the neckline and the joint of the skirt and bodice)
<b>Traces of repair</b>	No data	There could have been patches

Table 1. Characteristics of two 10th-century AD gowns.

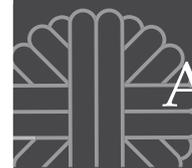


Fig. 18. Fragment of article in sprang technique (Photo: Authors).

Empire, while the third, showing no traces of cutting and tailoring could be a scarf, shawl or veil. There was also a linen shirt-waister gown with a blue skirt in the box. The gown was probably worn beneath a kind of blouse so that only the skirt was visible. It is not clear whether a samite strip is a trim of this gown, but, judging from the treatment of selvedge, if it were so the trim would run along the hem. Since the complete articles were not worn by the deceased but found in the box, it is unknown whether they make up a set.

The wool fabric could be a part of a cloak/veil, but this interpretation is not unambiguous as the shape of the article cannot be reconstructed.

It is worth noting that the collar of the brocade Dress 1 is divided by an inner fold into two parts in the ratio 1:2. The same division is recorded for collars

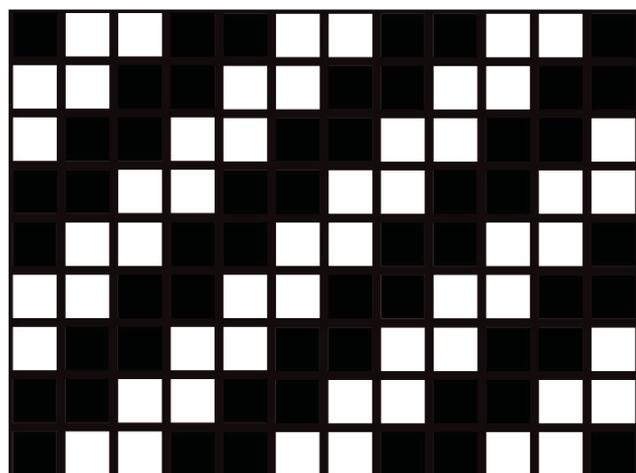


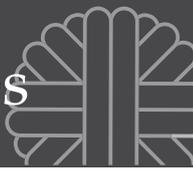
Fig. 19. Diagram of textile twill of wool fabric.

from burials in the Dmitrov kremlin dated to the 12th century AD (Orfinskaya *et al.* 2009, 10-16) and for trimming of gown collars of the Golden Horde period (Lantratova *et al.* 2002a, 26, 78, Fig. 6.1.14). It may be due to the influence of Chinese tradition adopted in the north and manifested in the treatment of certain costume details. Griffins<sup>6</sup> and dragons having come from the south could influence the depiction of local mythical beasts. This find demonstrates the complexity of interaction of occidental and oriental, northern and southern cultures.

#### Notes

1. Information about the Gnëzdovo archaeological site is available on the websites [http://ru.wikipedia.org/wiki/Гнёздовские\\_курганы](http://ru.wikipedia.org/wiki/Гнёздовские_курганы) and [www.gnezdovo.com](http://www.gnezdovo.com).
2. The width of the bodice measures 80 cm and two sleeves measure 60 cm each. The width of the cuff cannot be determined.
3. A piece is a unit of cloth needed to cut a single long gown reaching down to one's ankles (Fekhner 1982, 57). Such a piece is woven whole and has the starting and finishing borders which, like side selvedges, differ from the main cloth.
4. The term 'Persian' does not mean that these fabrics were manufactured in Iran. They could have been of foreign origin yet bought on the Persian market.
5. The length of the fragments is as follows:  $72+13+38+7+7+6+8+5+48+10 = 214$  cm.
6. Northern Europe has yielded diverse fabrics with griffins (Owen-Crocker 1986, 187). These are mainly Byzantine samites.

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