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## **Remains of Tapestry from a Xiongnu (Early 1st Century AD) Burial in Mound 22 at Noin-Ula\***

*The article describes two pieces of decorated woolen tapestry discovered by the Russian-Mongolian expedition in a Xiongnu (early 1st century AD) burial at Noin-Ula (Noyon Uul) mound 22, Mongolia, in 2012. One piece shows a composition consisting of a line of flowers surrounded by a “rolling wave” woven along the left edge, and bands of similar waves skirting the opposite side. The design on the other piece consists mostly of five bands with floral patterns separated by plain tawny stripes. The pieces are close, technologically, to woolen fabrics unearthed at Eastern Mediterranean cities such as Palmyra, Dura-Europos, and Masada. The designs resemble those on fabrics from early 1st millennium sites in Xinjiang (Shampula, Niya, and Loulan), as well as those on Syrian fabrics having typical Palmyra design. However, the Noin-Ula pieces differ from their Palmyran and Xinjiang counterparts by a more expressive manner of rendering floral motifs. On the basis of analysis of the dyes, the original palette is reconstructed. Our analysis suggests that the cloth could have been manufactured at an Eastern Mediterranean tapestry workshop—one of those of enduring fame. The cloth was probably imported to the Mongolian steppes, together with other articles, along the southern section of the Silk Road.*

Keywords: Xiongnu, Noin-Ula mounds, tapestries, dyes.

### **Introduction**

Woolen tapestry was first found in the Kondratyevsky mound in Tzurumte Pass, Noin-Ula Mountains, which was excavated by the Mongolian-Tibetan expedition headed by P.K. Kozlov in 1924. Small pieces of well-preserved tawny woolen fabric about 40 cm wide, with woven mono- and multicolored ornamental bands, were located on the floor of the looted burial

chamber, west of the coffin (Rudenko, 1962: Fig. 74, pl. LXVIII, LXIX). In his description of the woven pattern, S.I. Rudenko mentioned “gentle outlines of flowers and leaves, and delicate colors testifying to the good taste of the artisan” (Ibid.: 110). In his opinion, one of the decorative bands shows either tulips or poppies, while the other band represents twigs of some climbing plant (Ibid.: 108). Rudenko believed that it was impossible to determine the place of manufacture of the discovered fabric, owing to the lack of reliable data; but probably it was in Asia Minor (Ibid.: 110).

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## Description of the tapestry fabrics

In 2012, in the course of excavations of Noin-Ula mound 22, pieces of fabric similar to those found in the Kondratyevsky mound, yet not identical to them, were discovered, together with various other artifacts, on the floor of the burial chamber close to the well-preserved coffin. Like all the other objects, these textile pieces were embedded in clay (Fig. 1), and regained their original appearance only after profound restoration work. Apparently one of the pieces was used for the manufacture of some article: the fabric was folded in two, ruffled at one end, and probably sewn up at the other, as evidenced by the remaining holes and threads (Fig. 2). The article shows traces of two vertical seams located about 10 cm from one another, and a horizontal seam in the center. Iron “staples” were noted at the left and right ends of the article. Restorer E. Karpeyeva cleaned the article by removing clay from the top, inside, and bottom of it; after which it was decided to unfold the piece of fabric, conserving the threads of stitching in place. When the piece of fabric was unfolded and stretched, it showed a vertical decorative line of flowers in black-beige-brown colors, surrounded by narrow stripes ornamented as “rolling waves”, 10 cm to the left and to the right of the main line. The composition was balanced by the band on the right side of the piece, which consisted of two opposed “rolling wave” stripes (Fig. 3). The woven images of flowers resembling irises or lilies\* demonstrate astonishing manufacturing skills (Fig. 4). Even now, this piece of fabric creates a great impression by its art of weaving the flower-images in a beautiful pictorial manner. This fabric, whose original purpose in the Xiongnu culture is currently unknown to us, was used by its owners as a soft piece of textile for manufacturing some article. Judging by the original appearance of the find, it might have been used as a head-bolster\*\*.

Another piece of tapestry was found on the floor of the interior burial chamber, stuck in clay in the same

way as the piece described above: this piece, though, was in a far better condition. The find represents a fabric edge 80.7 cm long, with an adjoining portion of unevenly cut-off textile (Fig. 5). The woven pattern on this piece consists of five vertical bands alternating with plain tawny stripes. Patterned bands, as in the first piece, were woven in tapestry technique: to create the intended pattern, the weft was drawn only through a portion of the warp yarns. The central band represents two ivy-stems with variegated leaves twisting in opposite directions. The “rolling wave” stripes extend at both sides of the central band; and closer to the edges, two more ornamental stripes are located, which preserve representations of flowers and fruits.

Technological analysis of this piece has been carried out by T.N. Glushkova, who classified it as a patterned kilim rug\*. According to Glushkova’s data, the warp yarn consists of double, even, thin threads of Z2S-type, in which single threads of Z-twist are 0.25 mm thick, while double threads of extremely strong S-twist are approximately 0.3 mm thick. The weft yarns in plain fabric are very soft, show soft Z-twist and are 0.5–0.6 mm thick. The considerable looseness of the weft yarns attests to a low weaving-tension for imparting softness and elasticity to the produced fabric. The weft yarns used in patterned bands vary in color: red, dark brown, and two shades of light brown. The warp’s density is 11 threads to 1 cm; the weft’s density is 24 to 26 threads to 1 cm of plain fabric. The thread-density of patterned portions depends on the pattern, and varies with respect to the technique of weft yarn drawing within the ornamental scheme. The warp yarns are clearly seen in the areas of the torn-off border, and are practically invisible elsewhere on the cloth, because the warp yarns are densely interwoven with the weft yarns. A nap of the soft weft yarns was formed on the textile in the course of use.

Textiles manufactured through a combination of Z- and S-twist threads are of special interest, since their origin is unclear\*\*. Woolen fabrics with S-twist threads in the warp and Z-twist threads in the weft were identified in thousands of textile articles from Palmyra burials\*\*\*. However, A. Stauffer considered

\*In the antique and medieval artistic tradition, these two flowers were closely associated, and even interchangeable, images. For instance, according to one version, the “heraldic lily” of the Royal Household of France represents a stylized image of the Florentine Iris (*L. florentina*). Antique images of iris (lily) have been recorded in Assyria, Egypt, Greece, and Crete. Images of these flowers decorate royal scepters, tiaras, necklaces, seals, and bas-reliefs (Pasturo, 2012: 104).

\*\*Use of such textile bolsters by the citizens of Xinjiang oases was revealed by the well-preserved grave goods from the sites of Niya, Ingpan, and Loulan (Qi Xiaoshan, Wang Bo, 2008: 53, fig. 11; p. 36, fig. 1).

\*E.G. Tsareva (2006: 247–248) designated fabrics of this sort as kilims of tapestry-weaving structure.

\*\*R. Pfister has established that threads of S-twist were common among antique and medieval Egypt fabrics, while Z-twist threads were typical of fabrics from Persia and Central Asia (Stauffer, 2000: 14).

\*\*\*For instance, 47 articles with different twist of warp and weft threads have been recorded among 123 textile samples from the tomb of Kitot (40 AD) (Stauffer, 2000: 15).



*Fig. 1.* Textile article before cleaning.



*Fig. 2.* Textile article in the course of cleaning.



*Fig. 3.* Piece of tapestry after cleaning.



*Fig. 4.* Piece of tapestry with floral pattern.



*Fig. 5.* Piece of tapestry with vegetative pattern.



this type of fabric untypical for Palmyra. It has also been recorded in other Eastern Mediterranean towns, such as Dura-Europos and Masada (Ibid.).

The technology of weaving yarns of varied twist was used for improving the fabric's quality: warp double yarns of dense S-twist were stronger and thinner, while weft single yarns of loose Z-twist were softer and thicker; this allowed soft and durable fabric, which was likely used for manufacturing clothing. The burial in mound 22 yielded many pieces of unpatterned woolen fabric with similar technological features. Such fabric was also used for the manufacture of the gaiters (unstitched pants) found in this burial, which represented the only complete textile article here (Polosmak, 2015). The cloths of this type were probably imported to the Mongolian steppe from a single source.

In terms of ornamental composition, the textile pieces described herein are very close to woolen fabrics with typical Palmyran pattern, which were found in rich tombs of the 1st century AD at Palmyra (Fig. 6). A certain similarity can also be noted in individual motifs: the compositions on the compared cloths include the “rolling wave” pattern, which is also designated as “Vitruvian wave”\*, as well as representations of flowers and ivy stems. However, the described textile pieces and the piece from Kondratyevsky mound show the more elaborate pattern woven in tapestry technique, which is close to floral motifs; for example, in Pompeii fresco-painting. Small and elegant graphical patterns on the Palmyran fabrics were executed in another technique. According to Stauffer (2000: 22), they

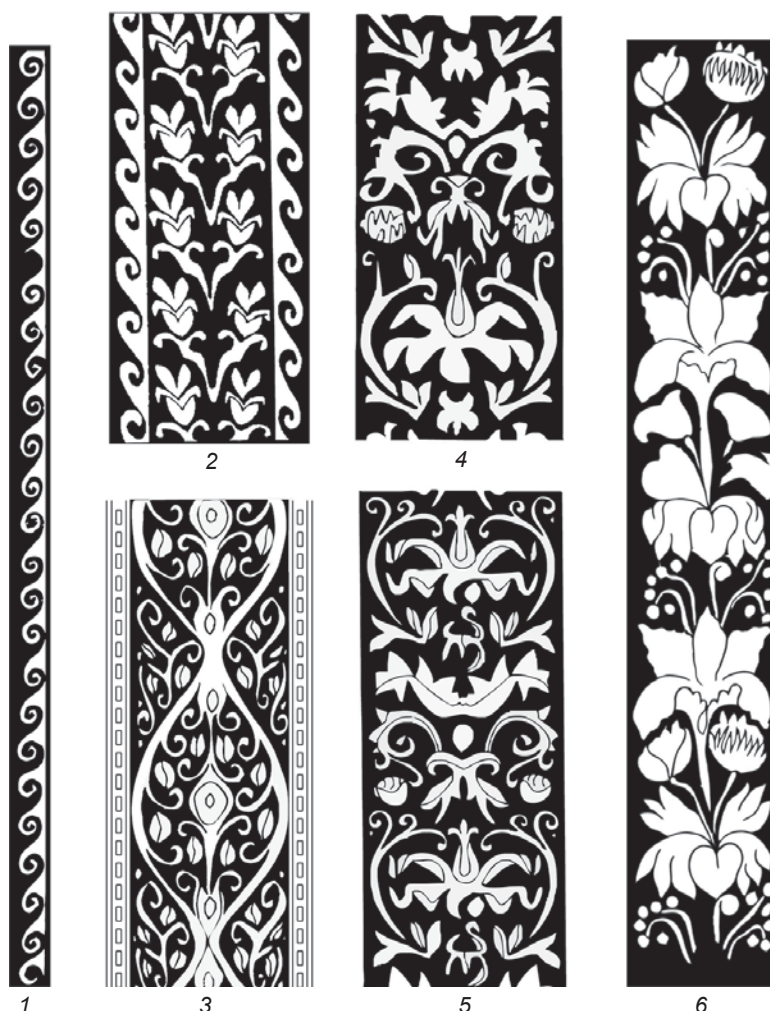


Fig. 6. Drawing of patterns on woolen fabrics from Noin-Ula, Kondratyevsky mound (1, 6), and Palmyra (2–5).

represent the highest degree of the multicolored-weaving technique.

Tapestry with such an arrangement of floral patterns (in the form of a framed band) has been discovered in the tombs at Shampula, Niya, and Loulan (Qi Xiaoshan, Wang Bo, 2008: 31, fig. 6; p. 54, fig. 1), where they were preserved in almost perfect condition, owing to the specific climate of this region. They belonged to the same period as the Noin-Ula pieces, and were mostly used in garment-manufacture. However, the articles compared herein cannot be regarded as very close analogs, because representations of flowers and leaves on the Xinjiang fabrics are more decorative than pictorial, and do not show subtle color renditions typical of the images on the Noin-Ula fabrics. Sometimes these ornaments were embroidered; such articles are known in Niya (Ibid.: 54, fig. 5). Supposedly, tapestry and

\*Various designations refer to a single motif, consisting of recurrent wave-like scrolls widely used in 4th century BC in Greek vase painting, and later in the Greco-Roman mosaic art and architecture (Wilson, 1999: 12, fig. 29). This motif has been recorded on fabrics, rugs, frescoes, and bone and metal articles over a vast territory from Gandhara to Xinjiang (Zhang He, 2012: 111–112), and on East Iranian rugs of the 4th–6th century AD (Spuhler, 2014: 30–57). The design was so popular that it is worth a special consideration as to its meaning. For instance, in Egyptian hieroglyphics, a wavy line with small sharp crests represented water.

embroidered cloths were produced in Xinjiang oases, where artisans followed the models imported from the West along the southern branch of the Silk Road, which was most popular branch during that period.

### Dyes and fabric-color

Owing to their centuries-long stay in Xiongnu graves in Noin-Ula, the fabrics have lost their original colors. In order to imagine the original look of the tapestry, special research, aimed at establishing the dyes used for coloring the yarns, was carried out at the Center of Spectral Investigations in the Department of Physical Organic Chemistry at the N.N. Vorozhtsov Novosibirsk Institute of Organic Chemistry SB RAS (for details of the techniques used and the research results, see: (Karpova et al., 2016)). Dyes of six samples of yarns were analyzed: black, beige, soot-colored, dark brown, dull red, and red.

Red yarns, which were used in weaving foliate patterns, yielded alizarin, purpurin, laccain acids, and

indigotin. The original color is thought to have been purple. Black yarns of the tapestry were dyed with indigotin and tannins (ellagic acid has been revealed). They were probably dark green originally. Traces of indigotin have been noted in the beige yarns of the tapestry. Originally, they were possibly pale blue. The dark brown tapestry-yarns were dyed with tannins and indigotin; this combination of dyes suggests an original green color. Traces of kermesic acid, alizarin, and purpurin have been noted in the soot-colored yarns, suggesting red or pink originally. The red yarns were dyed with laccain acids, and possibly were vermillion.

Research results allowed restoration of the presumed palette of tapestries (Fig. 7, 8): this included purple, red, white, pink, dark green, and light blue. The red coloring of tapestry-cloths and of yarns used in pattern-weaving, which currently evidences an indefinite brown color, is a result of the use of various dyes. The red dye of cloths contains laccain acids—lac dye, which since ancient times had been produced of lac insects (*Kerria lacca*). Lac insects mostly inhabit India and southern China (Yashchenko, 1999). It is noteworthy that the yarn's coloring combined dyes of both vegetable and animal origin: alizarin, purpurin, and kermesic acid. Alizarin and purpurin might have been produced from madder (*Rubia tinctorum* L.). The source of kermesic acid can be only one *Kermes* species, *K. vermilio* Planchon, inhabiting oak trees in the Mediterranean and the Near East. The well-preserved red color of the cloth attests to the durability of dyes produced from *Kerria* lac insects, which are more resistant to unfavorable conditions, as compared to the dyes made from madder roots and *Kermes* insects from the Mediterranean.

The combination of various dyes of different origin used for dyeing in particular colors the yarn, which was then used in weaving the multicolored patterns on the described tapestry, indicates that dyeing was carried out by skilled artisans with a profound knowledge and experience in this field. Similar compositions of dye were recorded during study of some woolen fabrics from Palmyra (Bohmer, Karadag, 2000: 83–84). Yarn-dyeing and tapestry-production were most likely carried out in Eastern Mediterranean workshops, where there were not only skilled weavers and dyers, but also raw materials and weaving samples necessary for the production of such high-quality cloths.

Study of the dyes used in woolen tapestry manufacture testifies to the original brightness of the articles. Fabrics and rugs found in Xinjiang were produced in various places and in different epochs, but retained their original colors; just like the Coptic



Fig. 7. Reconstruction of the original color of the tapestry from the Noin-Ula mound 22 (drawing by E.V. Shumakova).



Fig. 8. Reconstruction of the color of the tapestry from the Noin-Ula mound 22 (drawing by E.V. Shumakova).

fabrics discovered in Egypt, they demonstrate bright coloration exclusively. The ancient textile doesn't have any dull colors; it was dyed in surprisingly bright and saturated colors that the ancient dyers somehow managed to obtain.

### Conclusions

The pieces of tapestry from Noin-Ula mound 22, as well as the many other high-quality textiles of high historical value that were found earlier in the Xiongnu mounds at Noin-Ula (see: (Rudenko, 1962; Polosmak, 2012, 2015; Polos'mak, 2015)), are specimens from a superior weaving culture of the Eastern Mediterranean\*. These fabrics differ from their analogs both in Syria (Palmyra) and in Central Asia (Xinjiang). In terms of weaving quality, raw materials, and method of plain weaving, the fabrics under study are closest to one type of woolen fabric that was recovered from Palmyran tombs (Stauffer, 2000: 15), yet they are not identical. The skill in rendering floral motifs resembles that of the best Coptic textiles of the 4th–7th centuries.

We believe that in the late 1st century BC to early 1st century AD, in Xinjiang oases, woolen tapestries were produced for internal needs in accordance with the existing fashion and following the imported samples, such as fabrics from the Kondratyevsky mound and Noin-Ula 22 mound. Such locally produced tapestries of were found at several sites located along the southern section of the Silk Road. They are characterized by bright colors, and accuracy of patterns.

The fabrics recovered from the Noin-Ula mounds have faded and lost their original colors. Special research aimed at identifying the dyeing substances

enabled reconstruction of the colors. The observed color-palette of floral patterns in the ancient fabrics suggested that the artisans did not follow natural models, but rather their own perceptions of them. Judging by available written records, starting from the Han period, woolen tapestry was in great use and demand among the high-ranked Chinese generals and officials, who were ready to pay heavy prices for these goods (Lubo-Lesnichenko, 1994: 248–249). The finds described herein demonstrate the superior quality of the tapestry imported to China. However, we have come to know them exclusively from their placement in the tombs of nomadic nobility.

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\*The raw materials used, weaving technique, set of dyes, and ornamenting patterns suggest that the Eastern Mediterranean region was the place of manufacture of these extraordinary fabrics.

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