



Olga Orfinskaya and Olga Lantratova

Female costume of the Golden Horde period from burial 93 of the Maiachnyi Bugor I cemetery in the Astrakhan region of Russia

There are many dress remains recovered from various sites of the Golden Horde. Finds of complete costumes are, however, unique. In the summer 1991, the Astrakhan archaeological expedition headed by S.A. Koten'kov carried out excavations of the heavily damaged Maiachnyi Bugor I cemetery near the Krasnyi Yar village in the delta of the Volga River in the Astrakhan region of Russia. This Golden Horde cemetery dates to *ca.* AD 1250-1400. Among the excavated complexes a female burial 93 dated to the late 13th century AD is of particular interest since it enables one to reconstruct the complete set of female dress of the Golden Horde time, including underwear (Orfinskaya *et al.* 2006). All the grave goods from the burial, including clothes, are kept at the Archaeology Department of the State Historical Museum in Moscow.

Description

The following articles were identified while examining the excavated textiles (Fig. 1, Tables 1, 2):

– Red silk underwear referred to below as “red underwear” was found on the skeleton. It looks like a corset covering the chest and belly and fastened at the back with three laces. The remains of warmth-keeping lining made of plant fibre and fragments of underlining of cotton fabric as well as parts of sewn-

on leather appliqué details were found on the inside of the garment. The width, shape and multilayer structure of the article enable us to surmise that it is either a maternity belt or a corset for a very plump woman helping to distribute pressure at the waist evenly. Possibly the so-called “belly-cover-wrappers” encountered in male burials of the Yuan dynasty functioned as medical corsets (*Gold, Silk, Blue and White Porcelain* 2005, 63, 85).

– Trousers of a fine silk fabric lay over the “red underwear” below the waist. Trousers of a similar cut are well known from North Caucasian Alan cemeteries of the 8-9th century AD (Yerusalimskaya 1992, 45; Orfinskaya 2001, 206). This model, however, has a wide belt with laces regulating its width at the waist. The belt has a clear imprint of a figurative buckle, indicating that the trousers were decorated.

A short blouse (Blouse 3) only reaching the waist was made of the same fabric as the trousers. These two garments may be regarded as an underset.

– Fragments of two more blouses were found between the short blouse and the underwear. Only cuffs with three buttons survived of one of them and a part of the flap with long straight sleeves of the other.

– The under gown (Gown 3) is made of red brocade fabric with brown trimming at the collar and sleeves.

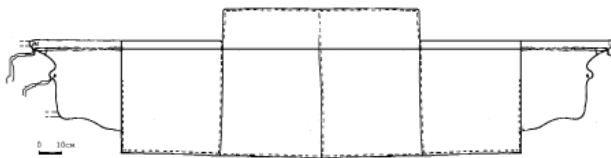


Tabel 1. Underwear from burial 93 of Maiachnyi Bugor I.

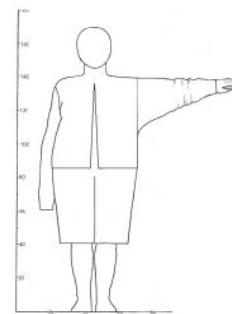
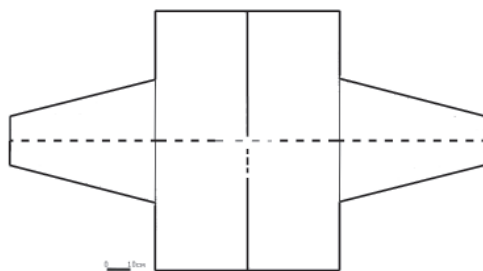
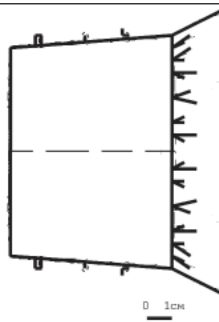
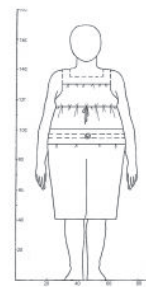
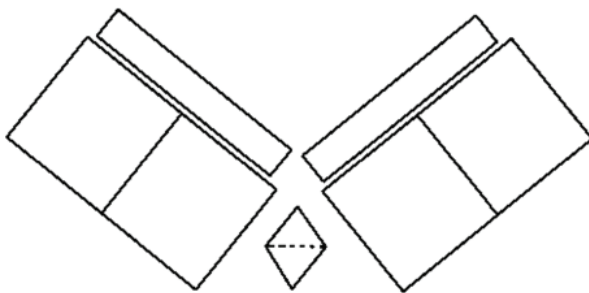
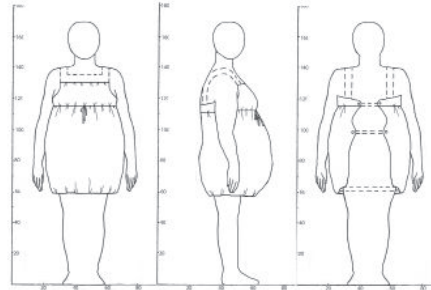
Description of garment	Drawing of surviving fragments
<p>Underwear corset Height 70 cm Maximum width 290 cm Main fabric - silk damask Lining - cotton Lining filling - cotton wool Appliqué details - leather</p>	
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Reconstruction of cut



Reconstruction of appearance





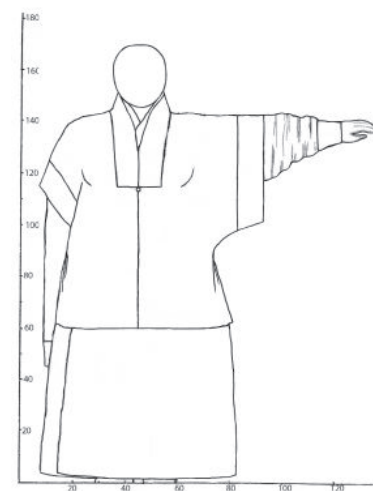
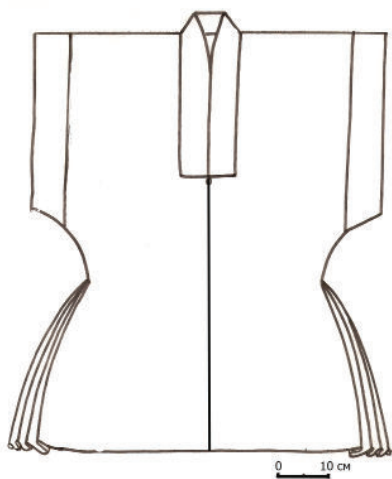
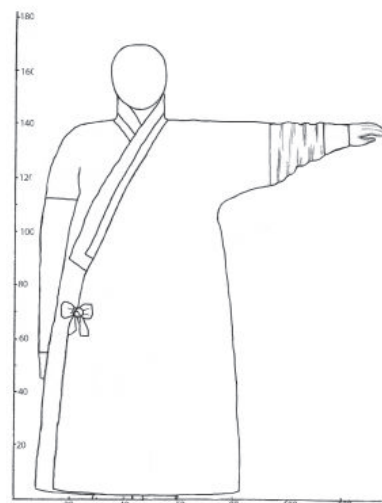
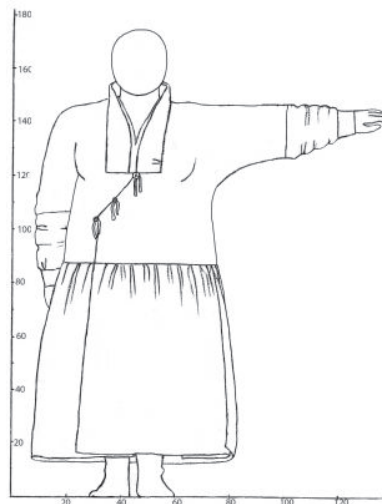
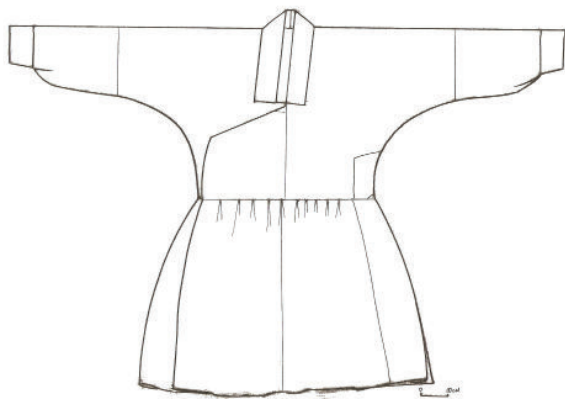
Tabel 2. Outer gowns from burial 93 of the Maiachnyi Bugor I.

Description of garment	Reconstruction of cut
<p>Inner gown 1 Height 125 cm Width at sleeves 192 cm Main fabric - brocade with "trees" on red background Trimmings - brocade with "clouds" on brown background Lining and laces - silk taffeta Lining filling - cotton taffeta</p>	
<p>Intermediate gown 2 Height 140 cm Width at sleeves 198 cm Main fabric - brocade with "texts" on brown background Trimmings - brocade with "playing animals" Trimmings - brocade with drop-shaped medallions Laces - gauze Lining - silk taffeta</p>	
<p>Outer gown 3 Height 85 cm Width at sleeves 72 cm Main fabric - brocade with "small clouds" on brown background Trimmings - brocade with "texts" on brown background Lining - cotton taffeta Lining filling - cotton wool</p>	



Reconstruction of shape

Reconstruction of appearance





running between the blouses and the under gown was found at the head and neck area. The bands ran under the blouse and lay next to the woman's body. The headdress was made of gauzy fabric with dark tabby underlining. Silk threads surviving at the ends probably attached additional ornaments, such as beads or silk tassels. A balaclava-shaped cap covered the neck and was buttoned with a single soft button under the chin. Traces of a minor repair implying that the cap was worn in life can be seen at certain parts of seams. The shape resembles that of male headdresses but it is possible that the cap was worn under a smart female headdress, for instance, the *bokka* (Mys'kov 1995, 40-41).

– Remains of leather boots and details of their silk trimming were found at the feet of the skeleton. Well-preserved boots with similar trimming were found at the Maiachnyi Bugor II cemetery (Lantratova *et al.* 2002a, 46-48).

– Fabric fragments of a pillow case were encountered near the head of the deceased.

– The dead body was placed on a rectangular cushion of red brocade. Remains of several layers of a dark cotton-fibre fabric have survived on the inside of the cushion. Stripes of red silk damask some 10 cm wide were sewn on to the short sides of the cushion. The fabric is identical to that of the above-described corset.

The analysis revealed a total of 12 garments made of 26 fabrics.

Textile fibres

The nature of textile fibres was determined by microscopy with the use of a reference collection of standard samples. The fibres identified included silk and cotton. Silks are the principal fabrics for dress-making. Brocade is used on the right-side of the garments and their trimming, while simple undyed tabby fabrics serve as lining and underwear. Red damask is the base of underwear, the lining of the collar of a gown and the trimming of the cushion. The tabby fabrics used either for keeping warmth as in the under gown or for lining as in the outer gown and the cushion consist of cotton fibres. The warmth-keeping cotton wool is used in red underwear and the outer gown.

Gilt membrane strips

Brocades contain two kinds of gilt membrane strips, the flat and spun ones. Flat gilt strips are made of animal bowels, the so-called membranes, faced with gold leaf on one side. Spun gilt strips are made in the same way but then wrapped around a silk core. The gilt membrane strip is wrapped round the silk

core in the Z-direction. They measure from 0.3 to 0.5 mm in thickness while the dimension of the twist pitch show a spread from 0.4 to 0.9 cm due to a fairly pronounced destruction of threads.

The metal composition of the gilt membrane strips is similar in all the threads analysed with gold making up more than 93%.

Methods and results of the study of gilt membrane strips in the Golden Horde brocade fabrics were discussed at length elsewhere (Jaro 1998, 141-148; Lantratova *et al.* 2002a, 172-180; Lantratova *et al.* 2002b, 245-249).

Dyes and dyeing technology

Textile dyes were examined using HPLC technique in N.N. Vorozhtsov Institute of Organic Chemistry of the Russian Academy of Sciences in Novosibirsk. The results are presented in Table 3.

Brown threads are dyed with tannin dyestuffs and an iron mordant. Besides tannins and iron cations, indigotin, a blue vat dye, was found in the threads of the main dark brown fabric of the headdress. Such a mixture of dyes was used in the Middle Ages to obtain a deep black colour of a fabric (Golikov, Semikin and Zharikova 2010, 41). It allows us to surmise that the headdress fabric was originally black.

Red fibres were dyed with mordant dyes made of madder roots. It should be noted that the red colourant of the damask can be easily removed even by water treatment. It may be indicative of the presence of a direct dye, which does not form stable complexes with silk fibres. Such a situation may be accounted for either by the destruction of the colourant after a long exposure to soil or an inherent flaw in the dyeing process.

The red-brown fabric with drop-shaped medallions and the openwork fabric of laces of the same colour were probably dyed with shikonin extracted from the roots of *Lithospermum erythrorhizon* native to China, Korea and Japan (Cardon 2007, 60), suggesting that fabrics dyed with this colourant were manufactured in China.

Black cotton lining of Gown 3 is dyed dark blue with a vat indigo dye. The finished fabric was piece dyed in a strong solution of the dye.

Fabric patterns

It is impossible to carry out an in-depth analysis of fabrics without a detailed art historical study. In this paper, however, we will only dwell upon the techniques used in the pattern design of the brocades (Table 4).

The simplest way of introducing design into a weave



No.	Garment	Textile colour	Dye	Possible dye source
<i>Headdress</i>				
1	Main fabric	dark brown	indigotin, tannins	indigo; tannin-containing plants
2	Lining	brown	tannins	tannin-containing plants
<i>Underwear corset</i>				
3	Main fabric	red	galiosin, pseudopurpurin, purpurin, alizarin	madder (<i>Rubia</i> sp.) roots
<i>Gown 1 with "tree" pattern</i>				
4	Main fabric	red	alizarin, purpurin	madder (<i>Rubia</i> sp.) roots
5	Cuffs and collar	brown	tannins	tannin-containing plants
<i>Gown 2 with "text" pattern</i>				
6	Main fabric	brown	tannins	tannin-containing plants
7	Cuff and collar trimmings	brown	tannins	tannin-containing plants
8	Cuff and collar trimmings	red-brown	shikonin	purple gromwell (<i>Lithospermum erythrorhizon</i>)
9	Collar lining	red	galiosin, pseudopurpurin, purpurin, alizarin	madder (<i>Rubia</i> sp.) roots
<i>Gown 3 with "small cloud" pattern</i>				
10	Main fabric	brown	tannins	tannin-containing plants
11	Collar	brown	tannins	tannin-containing plants
12	Lining (cotton)	black	indigotin	indigo
<i>Mat</i>				
13	Main fabric	red	alizarin, purpurin	madder (<i>Rubia</i> sp.) roots

Table 3. Dye analyses.

can be seen in the "tree" pattern fabric (Fig. 2). It is a diagonal grid where the decorative elements symmetrical to the vertical axis, the trees, are positioned at crossings. The design of the "cloud" fabric (Fig. 3); is based on the same principle but its elements are not symmetrical and therefore the fabric composition is more complex. The next degree of sophistication is the change of direction of non-symmetrical design elements positioned at every second crossing of the diagonal grid. This group includes the fabrics with "small clouds" and "birds". The next stage is the apposition of two diagonal grids with different mesh dimensions. It is represented by the fabric with "texts" where discs (Fig. 4) are placed at the crossings of the larger grid in either direct or mirror position, while trefoils

are situated at crossings of the smaller one (Fig. 5). This fabric has not only two elements differing in scale and symmetry but also a decorative stripe. The design of the stripe, like the entire fabric, is vertical. It enables one to differentiate between the various fabrics of the gown and to determine with a certain degree of confidence that selvages run across the fabric approximately every four meters. The fabric featuring "playing animals," namely leverets, has the most complex pattern. Its design is distinguished by a thin brown line against a lamé ground. The animals are depicted on sides of triangles connected by a complex "lamellar" grid. The complex pattern of the grid made it possible to fill the field of the fabric with a seemingly dynamic and varied design though the animals are only featured in three positions.



Tabel 4. Patterned fabrics from burial 93 of the Maiachnyi Bugor I.

	Pattern drawing	Pattern composition	Short description
1			<p>Gown 1 Main fabric with "trees". Composition - diagonal grid. Structure - damask on tabby base.</p>
2			<p>Gown 1 Fabric of trimming with "clouds". Composition - diagonal grid. Structure - lampas.</p>
3	<p>Trefoil element</p> <p>Main element: disc with text</p>		<p>Gown 2 Main fabric with "small texts". Composition - complex or double diagonal grid. Structure - lampas.</p>



	Pattern drawing	Pattern composition	Short description
4			<p>Gown 2 Fabric of trimming with "playing animals". Composition - complex "lammellar" grid. Structure - lampas.</p>
5			<p>Gown 3 Main fabric with "small clouds". Composition - diagonal grid. Structure - damask on tabby base.</p>
6			<p>Mat Основная ткань Composition - diagonal grid. Structure - damask on tabby base.</p>



Fig. 2. Fabric with “tree” pattern (Photo by the Author).



Fig. 3. Fabric with “cloud” pattern (Photo by the Author).



Fig. 4. Fabric with the “texts” pattern, the discs (Photo by the Author).



Fig. 5. Fabric with the “texts” pattern, the trefoil (Photo by the Author).



The design system of the fabric with “drop-shaped medallions” cannot be determined since this fabric is used for trimming and survives only in small pieces.

Weaving pattern

The weaving technology was studied by microscopic methods with the use of the optical microscope “MBC-10” at 20-100X magnifications.

Besides simple tabby fabrics of silk and cotton fibres, the find yielded a damask fabric where the design is introduced by substitution of the warp twill 3:1 with a Z-twist by the weft twill 1:3 with an S-twist. The remaining seven fabrics can be regarded as brocades since they include gilt threads in their structure. These fabrics can be divided into three groups according to the structure of weaves: weft-patterned on the basis of tabby, brocaded on the basis of tabby and lampas.

The weft-patterned group includes three fabrics, namely those with “trees”, “small clouds” and “birds.” All of them are based on tabby weave and have a warp and two systems of weft threads, the basic and the brocaded, the latter made with gilt threads (Table 5). A fabric with “drop-shaped medallions” was assigned to brocaded fabrics on the tabby basis. The three remaining fabrics are lampases on the tabby basis (Table 6).

The distribution of gilt threads over the cloth

Irrespective of the type of weave, gilt threads in three fabrics run evenly through the entire cloth while in the other three they are arranged in stripes (Table 7). This characteristic reflects the economizing of resources in fabric manufacture. Clearly, the introduction of gilt threads by stripes leads to the economy of this expensive material. Thus, even thin stripes of seven rows (0.27 cm) without gilt threads, as is the case of the fabric with “texts”, enable one to save 168 meters of the expensive thread per running meter, amounting to the economy makes of 13.5 %.(1). The fabric with “texts” is visually homogenous without visible stripes. It can be surmised that a skilled craftsperson designed the pattern and achieved the visual effect of homogeneity with the minimum of expenditure. There is no such effect in two other fabrics where gilt thread also runs in stripes. Both “birds” and “small clouds” are positioned in pronounced stripes. They belong to a cheaper category of brocades.

Thread count

The analysis of fabrics (Table 7) has demonstrated that the lampas fabrics can be divided into two subgroups: those with high thread count and a more

complex pattern (double lozenge grid and “lamellar” grid) and those with low count and simple pattern (lozenge grid). The most complex fabric in this respect is the one with “playing animals”, while those with “texts” and “clouds” are simpler (Table 7), *i.e.* lampases have a more complex structure of decoration than the weft-patterned ones.

Ground weave and pattern

The gilt pattern area naturally prevails or is equal to that of the silk ground in brocades. Gilt threads, however, can be used not only to form the pattern but also for the ground. In this case the pattern is formed by thin lines of the warp. Among six brocades only the fabric featuring “playing animals” has a gilt ground. The ground of other fabrics is either red or brown. It is interesting that the ground colour does not depend on the weave, *i.e.* colour is not connected with either simple or complex structure of the fabric.

Piece dimensions and types of selvedge

It was not always possible to find selvedges and establish the piece width in the excavated textile. We succeeded in establishing the width of three fabrics. These are the fabric with “trees” (64 cm wide), with “texts” (48 cm wide) and with “birds” (56 cm wide). The lampas fabric with “texts” has the minimum width, while the weft-patterned fabric with “trees” is the widest. Five fabrics yielded two types of selvedges: that with a vertical gilt stripe and cut off weft threads, and the common one where the gilt weft-threads turn back before the selvedge and do not take part in its formation. The second type is present in all three weft-patterned fabrics, while the first one can be seen only in the two lampas fabrics. No selvedges have survived in the fabric with “playing animals”.

Quality of fabrics

The category of silk fabric quality is purely conventional and adopted here solely for the small group of fabrics examined. No statistical data necessary for an in-depth study of this topic have been collected. The distinction between high- and poor-quality fabrics is, however, important for the textile analysis.

The quality of the finished fabric depends on the quality of raw materials and on the execution of the sequence of weaving operations. We analyzed the thread quality, *i.e.* the presence of bulges, the entanglement of fibres, and the evenness of twist and thickness along the thread, for six brocades. Such weaving errors as the end down are indicative of poor raw material. Dyeing technique and the



Schematic relationship of ground and pattern weft binding		Commentary																																																																																										
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Table 5. Schematic drawings of fabrics with brocade bindings.



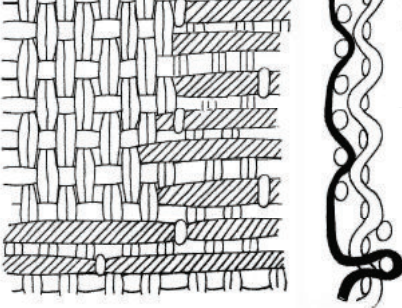
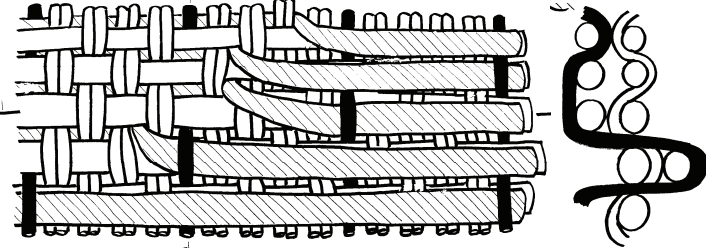
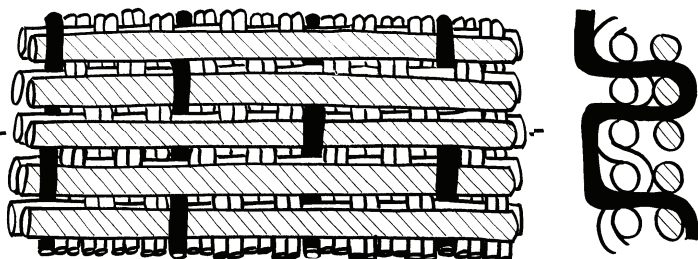
Schematic drawing	Commentary
	<p>Gown 1 Trimming fabric with "clouds" Lampas with taffeta ground Ground warp/pattern warp = 4:1. Ground warp – double threads. Ground – 1:1 Ground weft/pattern weft = 1:1 Pattern – 1:2 (Z)</p>
	<p>Gown 2 Main fabric with "texts" Lampas with taffeta ground Ground warp/pattern warp = 4:1. Ground warp – double threads. Ground – 1:1 Ground weft/pattern weft = 1:1 Pattern – 1:2 (Z)</p>
	<p>Gown 2 Trimming fabric with "playing animals" Lampas with taffeta ground Ground warp/pattern warp = 4:1. Ground warp – double threads. Ground – 1:1 Ground weft/pattern weft = 1:1 Pattern – 1:2 (S)</p>

Table 6. Schematic drawings of bindings in lampas fabrics.

Textile pattern	Binding	Pattern design	Gilt threads	Distribution of gilt threads	Rapport size (cm)	No. of elements*	Size of element (cm)	Ground weave/pattern	Ground weave thread count
"trees"	damask	diagonal grid	flat	entire cloth	1x2	1	1x1	silk/gilt thread	45/17
"small clouds"	damask	diagonal grid	flat	stripes	2x1	1 (+)	1x1	silk/gilt thread	52/16
"birds"	damask	diagonal grid	flat	stripes	3.5x3.5	1 (+)	1.5x2	silk/gilt thread	50/15
"clouds"	lampas	diagonal grid	spun	entire cloth	3x3	1	2x3	silk/gilt thread	38/13
"texts"	lampas	Complex diagonal grid	spun	stripes	8x4.5	1(+)	1x1 2.5x2.5	silk/gilt thread	48/26
"playing animals"	lampas	"lamellar" grid	spun	entire cloth	4x8	3	1.5x2.5 2x2 2x2	gilt thread /silk	54/20

* - (+-) indicates that this element has both direct and mirror image.

Table 7. Characteristics of brocaded textiles.



execution of the pattern also bear witness to the fabric quality. Thus, the depiction of birds in the cushion fabric is clearly seen in one direction and only with difficulty in the other. After summing up all these characteristics the fabrics were divided into two categories. The fabrics with even warp and weft threads having no pronounced defects, whose cloth is smooth and without errors and whose design is clear-cut were assigned to the high-quality group. The fabrics with mostly even warp threads and defective weft threads showing high fluctuation of thickness, whose cloth abounds in errors and whose design is confused are regarded as being of inferior quality. Lampases were assigned to the high quality group and weft-patterned fabrics to that of inferior quality. Differences in quality can also be distinguished within the first group. However, as stated above, we have only given a broad outline of the relevant study that requires a large amount of excavated textiles for comparison.

Conclusion

The archaeological record is, together with the written, iconographic and ethnographic sources, one of the pillars supporting the reconstruction of costume and visualization of the past.

The textiles and garments from Burial 93 of Maiachnyi Bugor I cemetery demonstrate that:

- Burial took place in winter as the deceased wore several types of warmth-keeping clothes;
- The same fabric type was used to manufacture a variety of garments;
- Clothes were made locally, possibly in the household;
- Fabrics previously used in other garments were reused for minor trimming details.
- Of fundamental importance is the question of the provenance of brocades. Let us turn to the fabric bearing benedictive Turkic inscriptions in Uighur characters, *i.e.* the main fabric of Gown 2. The areas of East Turkestan inhabited by the Uighur have yielded hundreds of Turkic texts in Uighur characters dating from the 8th to the 18th centuries AD. These are primarily business documents, letters and mainly fragments of Buddhist, Christian and Manichaean texts (Morozov 2006, 14). It appears therefore that the fabric with “texts” could have been manufactured in the East Turkestan where the famous cemetery of Astana yielded many high quality fabrics (Lubolesnichenko 1994, 79). As discussed above, the fabric with “texts” shows a complex pattern and a complex design, a skillful calculation of materials needed and can be regarded as originating from a centre with well-developed weaving traditions. The fabric

with “clouds” has certain common traits with that with “texts,” in particular selvages. It is possible that these two silks were manufactured in the same production centre.

– The weft-patterned fabrics of inferior quality could have been manufactured either in a centre with well-developed weaving traditions or in a newly-founded centre, for example in the Volga delta where weavers from Central Asia were settled (Müller-Christensen 1955, 30, 31).

– The brocaded fabric has numerous analogies to Chinese textiles. The dyestuff composition also implies Chinese manufacture.

– The red damask fabric shows a characteristic Chinese design. Its unstable dye, however, gives ground to doubt that it was manufactured in a major textile centre. On the other hand, the mordant could lose its durability after a long exposure to adverse conditions.

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Notes

1. A calculation of the saving of gilt threads in the fabric with “texts”, pattern unit 0.8 cm: The unit has four stripes comprising seven rows of wefts without gilt threads each. Thus, every unit has 28 rows without gilt threads. The unit fits 12.5 times in a running meter. Thus, a running meter of the fabric comprises 350 rows without gilt threads. The width of the weaving piece being 48 cm, it makes up 168 m. It is the length of the gilt thread that was not introduced into the fabric by leaving thin stripes of the base cloth between decorative elements. Thread count being 26 weft-threads to the centimeter we have 2600 rows to the meter. We multiply the number of rows by the width of the fabric and get 1248 meters. It is the length of gilt threads that would have been spent in the case of their use over the whole area of the weaving piece one meter long. As it appears from the proportion 1248 m – 100%, 168 m – x %, 168 meters make up 13.5 % of the whole length. Thus, the introduction of gilt threads in stripes provides a considerable economy of gold.

**Bibliography**

Cardon, D. (2007) *Natural dyes. Sources, Tradition, Technology and Science*. Archetype Publications. London.

Golikov, V. P., Semikin, V. V., and Zharikova, Z. F. (2010) Исследование красителей и технологии крашения коптского текстиля в коллекции ГМИИ им. Пушкина [A study of dyestuffs and dyeing technology of Coptic textiles in the collection of the Pushkin State Museum of Fine Arts]. In O. Lechitskaia, *Коптский текстиль*. [Coptic Textiles]. Moscow.

Gold, Silk, Blue and White Porcelain (2005) *Fascinating Arts of Marco Polo Era*. Hanzhou.

Jaro, M. (1998) Differences in manufacturing technique, usually neglected, with the description of mediaeval metal threads made of metal coated organic material. Some remarks on the basis of scientific examinations. In R. Varoli-Piazza (ed.), *Interdisciplinary Approach about Studies and Conservation of Medieval Textiles* [Approccio Interdisciplinare allo Studio e alla Conservazione dei Manufatti Tessili d'Età Medievale]. Convegno-Interim Meeting ICOM-CC, Palermo, 22-24 Ottobre 1998. Rome.

Lantratova, O. B., Golikov, V. P., Orfinskaya, O. V., Vladimirova, O. F., and Egorov, V. L. (2002a) Исследование уникальных археологических памятников из собрания Государственного Исторического музея – комплексов одежд XIII-XIV вв. [Investigation of unique archaeological monuments from the collections of State Historical Museum – costumes of 13th-14th c. CE]. Moscow.

Lantratova, O. B., Golikov, V. P., Orfinskaya, O. V., Aliyev, A. D., and Payushina, O. V. (2002b) Экспериментальное исследование техники изготовления золотных нитей в золотоордынском текстиле XIII-XIV из собрания ГИМ (Experimental investigation of manufacturing technique of gold threads in the Golden Horde textiles from the collections of State Historical Museum). In VI Научная конференция «Экспертиза и атрибуция произведений изобразительного искусства» 2000 [VI Scientific Conference "Expertise and Attribution of Art Work"]. Moscow.

Lubo-Lesnichenko, E. I. (1994) *Китай на шелковом пути* [China on the Silk Road]. Moscow.

Morozov, D. A. (2006) Уйгурская запись в древнерусской рукописи [Uighur writing in Old

Russian manuscript] In *Памятники культуры. Новые открытия. Письменность. История. Археология. Ежегодник 2004* [Cultural Monuments. New Discoveries. Writing. History. Archaeology Annual 2004]. Moscow.

Müller-Christensen, S. (1955) *Gewänder des Mittelalters (tent. Cat.)*. München.

Mys'kov, E. P. (1995) О некоторых типах головных уборов населения Золотой Орды [Certain types of headdresses of the Golden Horde population]. *Rossiiskaya arkhologiya*, 2, 36-43.

Orfinskaya, O. V. (2001) Раннесредневековый текстиль из коллекции Карачаево-Черкесского музея-заповедника [Early Medieval textiles from the collections of the Karachai-Circassian Museum]. PhD Thesis, Moscow.

Orfinskaya, O. V., Golikov, V. P., Lantratova, O. B., and Rudakov, V. G. (2006) Исследование нескольких деталей женского костюма из захоронения золотоордынского периода на могильнике Маячный бугор – I [Investigation of a few female costume elements from the Golden Horde period burial at Maiachnyi Bugor I cemetery]. In *Город и степь в контактной евро-азиатской зоне. Тезисы докладов III Международной научной конференции, посвященной 75-летию со дня рождения Г.А. Федорова-Давыдова (1931 - 2000)* [City and steppe in the Eurasian contact zone. Acts of the III International Scientific Conference dedicated to 75th birthday of G. A. Fedorov-Davydov (1931-2000)]. Moscow.

Vollmer, J. (2001) *Ruling from the Dragon Throne: Costume of the Qing Dynasty (1644-1911)*. Berkeley, CA.

Yerusalimskaya, A. A. (1992) *Кавказ на шелковом пути. Каталог выставки* [Caucasus on the Silk Road. Exhibition Catalogue]. St. Petersburg.

Шелковый путь (2005) *5000 лет искусства шелка* [Road of Silk: 5000 Years of the Art of Silk]. Moscow.

Corresponding author: Olga Orfinskaya
orfio@yandex.ru