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## RECONSTRUCTION OF CENTRAL ASIAN NOMADIC DEFENSIVE ARMS

The reconstruction of arms and appearance of warriors of different peoples and states is of great importance in studying military art of ancient and medieval nomads in Central Asia. The reconstruction gives us an opportunity to make comparative analysis in order to find out about the differences in arms and armour of particular ethnic groups as well as to determine the local, cultural, regional and chronological characteristics of nomadic armour. The results of such research help us to follow the stages of evolution and discover the mechanism of development of military science of nomadic peoples of Central Asia<sup>1</sup>.

Thanks to arms reconstruction, we can compare the levels of arms development among different nomadic tribes, distinguish between the arms typical of distant and close combat and find out about various kinds of body defences, the value and characteristics of armour as well as explain the causes of some victories and defeats by analysing the differences between particular arms sets and methods of using them. The best form of graphic reproduction of each armour set is a picture of a warrior made as a result of scientific reconstruction. Different states of preservation of arms found during archaeological excavations of cultural monuments of ancient and medieval nomads from Central Asia do not often allow us to provide an image and reconstruct the appearance of a warrior. This is why images of warriors discovered on rocks, metal, sculpted relieves, sculptures as

well as reconstructed thanks to verbal descriptions preserved in written historical material are an indispensable sources of information for scientific and artistic reconstruction.

The images of warriors on historic monuments, paintings, mosaics, sculpted relieves and sculptures found in the Mediterranean, the Near East and the Middle East, Central and Eastern Asia were the main sources for reconstruction of ancient and medieval warriors' appearance in classic books on military history. The artists who illustrated the military books of the nineteenth-twentieth centuries used the original images of ancient and medieval warriors and made the pictures look as realistic as possible, which was typical of that time.

The accuracy and authenticity of the reconstructions of ancient and medieval warriors in many respects depended on the information found in relevant sources and the graphic material used. The most detailed and graphically expressive reconstructions of defensive clothes of Iranian, Turkish and Mongol warriors of the Steppe of Eurasia were made by M. V. Gorelik between the 1970s and 1990s. In his works, the author used very informative medieval Persian and Middle Asian miniatures and museum exhibits, including well-preserved Mongol and medieval helmets, armour and chain mail from the Kremlin in Moscow and the Hermitage<sup>2</sup>. A wide application of

<sup>1</sup> Yu. S. Khudya k o v, *Vooruzhenye yenisseyksikh kirgizov VI-XII vv.*, Novosibirsk 1980, pp. 131-138; Yu. S. Khudya k o v, *Vooruzhenye srednevekovikh kochevnikov Yugnoy Sibiri i Tsentralnoy Azii*, Novosibirsk 1986, pp. 146-154; Yu. S. Khudya k o v, *Vooruzhenye tsentralnoazyatskikh kochevnikov v epokhu rannego i razvitogo srednevekovyya*, Novosibirsk 1991, pp. 146-154; Yu. S. Khudya k o v, *Vooruzhenye kochevnikov yugnoi Sibiri i Tsentralnoy Azii v epokhu razvitogo srednevekovyya*, Novosibirsk 1997, pp. 121-137.

<sup>2</sup> M. V. Gorelik, *Mongolo-tatarskoye oboronitelnoye vooruzhenye vtoroy poloviny XIV-nachala XV v.*, [in:] *Kulikovskaya bitva v istoriy i kulture nashei Rodiny*, Moscow 1983, pp. 230-258; M. V. Gorelik, *Ranniy mongolskiy dospekh (IX-pervaya polovina XIV v.)*, [in:] *Arkheologiya, etnografiya i antropologiya Mongolii*, Novosibirsk 1987, pp. 163-208; M. V. Gorelik, *Zashchitnoye vooruzhenye stepnoy zony Evrazii i primikayushikh k ney territoriy v I tis. n.e.*, [in:] *Voyennoye delo yuga Sibiri i Dalnego Vostoka*, Novosibirsk 1993, pp. 149-179; M. V. Gorelik, *Armiy mongolo-tatar X-XIV vekov. Voynskoye iskusstvo, snaryazhenye, oruge*, Moscow 2002, pp. 32-47.

finds from archaeological excavations of ancient and medieval tombstones for the reconstruction of the arms and appearance of nomadic warriors in the territory of South Siberia and Central Asia gave one of the authors of this article a chance to define the most typical characteristics of arm sets of different nomadic peoples and cultures of this region, as well as to trace their evolution in several historical periods. Between the 1970s and 1990s, thanks to analysis of archaeological material coming from excavations and museum collections, as well as graphic and written historic sources in the period from seventies to nineties several arms sets and the appearance of heavy armoured warriors and light armoured cavalry of Hun, Uigur, Kyrgyz, Kidan, Kypchak, Mongol and other nomadic peoples were reconstructed<sup>3</sup>. Consequently, the authors of this article went on gathering and studying material, graphic and written sources concerning the arms and armour of nomadic peoples in Central Asia in the late Middle Ages. Using material collected at archaeological monuments and found in museum collections in the cities of Russia, Kazakhstan, Kyrgyzstan, China, Mongolia, and studying iconographic information as well as written and folklore sources, the arms, armour and appearance of Halha-Mongols and warriors from Dzungar, Ensey Kyrgyz, Manchurs and the Buhar emirate were reconstructed<sup>4</sup>. In the process of studying the weaponry of ancient and medieval nomads in South Siberia and Central Asia

some problems connected with its reconstruction emerged because of some discrepancies between the archaeological and iconographic material used resulting from lack of information and the quality of the surviving material. Different versions of interpretation and reconstruction of its original look were suggested.

In 1974, a set of iron arms excavated at Tatarsky mogilki in Verhnee Priobie was reconstructed by A. P. Umansky as a rectangular breastplate made from horizontally placed plates with a double edge<sup>5</sup>. This reconstruction obtained the recognition of specialists in military history. The appearance of the Verhneobi culture warriors was reconstructed by A. P. Umansky and V. V. Gorbunov<sup>6</sup>. However, subsequently, V. V. Gorbunov suggested another variant of this armour, consisting of both a breastplate and a back plate. Unlike the first variant, it had the plates placed vertically and it resembled lamellar armour<sup>7</sup>. M. V. Gorelik offered a completely different reconstruction of this type of armour. According to him, it was a rectangular metal shield cover<sup>8</sup>. Unfortunately, archaeologists excavating medieval kurgans do not always properly record the location of metal plates in the tombs. This is why we do not have a chance to use this kind of information for armour reconstruction. Lack of accurate information about the iron plates from the ancient Turkish tomb of Balyk-Sook I in the Gorny Altai led to some mistakes in armour reconstruction, when some plates were identified as a helmet with a special plate shoulders protection<sup>9</sup>. New opportunities for the reconstruction of ancient and medieval weaponry of Central Asian nomads as well as attempts to establish its functional characteristics and evaluate

<sup>3</sup> Yu. S. K h u d y a k o v, *Vooruzhenyeyenisseyskikh...*, pp. 131-138; Yu. S. K h u d y a k o v, *Vooruzhenyey srednevekovikh...*, pp. 47-48, 103-107, 160, 174, 198; Yu. S. K h u d y a k o v, *Vooruzhenyey tsentralnoazyatskikh...*, pp. 20, 42-43, 69, 87, 146-154; Yu. S. K h u d y a k o v, *Vooruzhenyey kochevnikov...*, pp. 116-117.

<sup>4</sup> L. A. B o b r o v, *Zashchitnoye vooruzhenyey kochevnikov Tsentralnoy Azii i Yugnoy Sibiri v period pozdnego srednevekovyey*, "Nasledyey drevnykh i traditsionnykh kultur Severnoy i Tsentralnoy Azii. Materialy 40 Regionalnoy arkheologo-etnograficheskoy konferentsiy", Novosibirsk 2000, vol. III, pp. 84-85; L. F B o b r o v, Yu. S. K h u d y a k o v, *Zashchitnoye vooruzhenyey sredneazyatskogo vojnyey perioda pozdnego srednevekovyey*, [in:] *Voennoye delo nomadov Severnoy i Tsentralnoy Azii*, Novosibirsk 2002, Figs. 15-16; L. A. B o b r o v, Yu. S. K h u d y a k o v, *Boyeve nagoloviyey kochevnikov Mongolii i Kalmikiy vtoroy poloviny XVI-nachala XVIII v.*, "Drevnosti Altaya. Gorno-Altaysk", 2003, No. 11, Tabl. 8-9, 18-19; Yu. S. K h u d y a k o v, L. A. B o b r o v, *Shlemi kochevnikov Tsentralnoy Azii v epokhu pozdnego srednevekovyey*, [in:] *Istoricheskiiy opit khozaystvennogo i kulturnogo osvoyeniya Zapadnoy Sibiri*, Barnaul 2003, Book I. pp. 227-236.

<sup>5</sup> A. P. U m a n s k i y, *Mogilniki verkhneobskoy kulturi na Verkhnem Chumishe*, [in:] *Bronzoviy i zhelezniy vek Sibiri*, Novosibirsk, 1974, p. 147, Fig. 7.

<sup>6</sup> A. P. U m a n s k i y, V. V. G o r b u n o v, *Rekonstruktsiyey vooruzhenyey voynyey verkhneobskogo Pravoberezhia v IV-V vv. n.e.*, [in:] *Okhrana i issledovaniya arkheologicheskikh pamyatnikov Altaya. Tezisy dokladov i soobshcheniyey k konferentsiyey*, Barnaul 1991, Fig 1.

<sup>7</sup> V. V. G o r b u n o v, *Pantsiryey iz Tatarskikh mogilok (restavratsiyey i rekonstruktsiyey)*, [in:] *Materialyey po voyennoy arkheologiyey Altaya i sopredelnykh territoriyey*, Barnaul 2002, p. 76.

<sup>8</sup> M. V. G o r e l i k, *Zashchitnoye vooruzhenyey...*, p. 167.

<sup>9</sup> G. V. K u b a r e v, *Dospekh drevneturkskogo znatnogo vojnyey iz Balik-Sooka (Tsentralniy Altay)*, [in:] *Materialyey po voyennoy arkheologiyey Altaya i sopredelnykh territoriyey*, Barnaul 2002, p. 102.

its effectiveness have been made thanks to the use of modern methods of natural sciences and experimental archaeology. This kind of research should involve specialists in aerodynamics, ballistics and mathematics in order to reconstruct the force required to pierce and damage a protective metal cover<sup>10</sup>. Works concerning modern reconstructions of individual metal defenses are of great importance in studying protective armour of ancient and medieval nomads in Central Asia as they allow us to evaluate the functions and effectiveness of the armour, helmets and other types of weaponry.

The methods of making models of ancient and medieval armour are commonly applied and successfully developed by specialists and dilettantes of military history in European countries, Asia and America. Specialist companies make modern models of weapons and armour for commercial purposes. In Russia and neighboring states, it is usually military science fanciers, members of military-historical clubs interested in war games based on famous historic battles who make modern models of ancient and medieval defensive arms. The sources they use are illustrations from popular scientific literature, because the reconstructions are to be accurate copies of the historical originals.

In the 1980s in Russia, using the relevant scientific knowledge, I. Ya. Abramson and M. V. Gorelik performed a successful experiment and created modern reconstructions of medieval arms and armor of Russian and Tatar-Mongol warriors in order to make an exhibition at the Museum of Kulikov Battle. They headed a group of skillful craftsmen who made costumes for the 'Mosfilm' film studio in Moscow.

Last year, some experiments in the reconstruction of ancient and medieval defensive armour were carried out by specialists in historical arms and members of military-historical clubs in several towns and cities of Siberia. The members of the 'Mergen' military-historical club in the town of Abakan, directed by A. L. Petrenko, made a model of a body defense using a graphic

reconstruction of lamellar armour, a kuyak of a medieval Kyrgyz warrior. Yu. S. Khudyakov produced a model of this kind of armour using the lamellae from the armour treasure found in the town of Abaz<sup>11</sup>. Another variant of the reconstruction of the Abaz armour was suggested by M. V. Gorelik<sup>12</sup>. The Abaz armor was made of modern material in and plates sewn on the armour (the armour plates were placed on a fabric base). They were attached to the fabric base on the inside by means of metal rivets. Using this kind of fastening on one side is very comfortable and functional. Lack of a firm fastening made it possible for the plates to overlap and therefore strengthened the protection and did not restrict the warrior's movements. The researches showed that the kuyak, a set of plates-sewn on armour, was very comfortable and that the warrior was able to put it on himself, use it for both foot combat and on horseback as it did not restrict his movements while using side arms. The weight was evenly distributed over the warrior's body, which allowed him to wear the armour for quite a long time. With the help of the above experiments, the structural characteristics of this kind of armour were discovered and its effectiveness and usefulness for medieval Kyrgyz and Mongol warriors assessed<sup>13</sup>. This experience proved that the creation this kind of models could be a source of information for the analysis of construction and functional characteristics of medieval nomadic armour.

In order to create such reconstructions and exactly reproduce the tiniest parts of suits of armour and helmets, scientists need to examine the cut and metal fastenings of well-preserved nomadic suits of armour dating from the late Middle Ages. In Central Asia, finds of this type discovered in tombs are scarce and poorly preserved. This is why some perfectly preserved Halha-Mongolian, Dzungar and Tibetan warrior head coverings from Russian, Mongolian, Chinese

<sup>10</sup> Yu. A. Vedernikov, Yu. S. Khudyakov, A. I. Omelayev, *Ballistika ot strel do raket*, Novosibirsk 1995, pp. 192-201; S. N. Korobeynikov, Yu. S. Khudyakov, *Analiz funktsionalnikh svoistv zashchitnogo vooruzheniya nomadov Tsentralnoy Azii*, "Arkheologiya, etnografiya i antropologiya Evrazii", 2001, No. 4, pp. 108-115.

<sup>11</sup> Yu. S. Khudyakov, *Vooruzhenye yenissey-skikh...*, pp. 123-125; A. L. Petrenko, Yu. A. Petrenko, *Zashchitniy svoystva srednevekovikh pantsirey yuga Sibiri i Tsentralnoy Azii (po materialam experimenta)*, "Voyennoye delo narodov Sibiri i Tsentralnoy Azii", Novosibirsk 2004, vol. 1, pp. 102, 107-111.

<sup>12</sup> M. V. Gorelik, *Ranniye mongolskiy...*, Figs. 2, 23.

<sup>13</sup> Yu. S. Khudyakov, *Vooruzhenye Yenissey-skikh...*, pp. 123-125; A. L. Petrenko, Yu. A. Petrenko, *Zashchitniy svoystwa...*, pp. 102, 107-111.

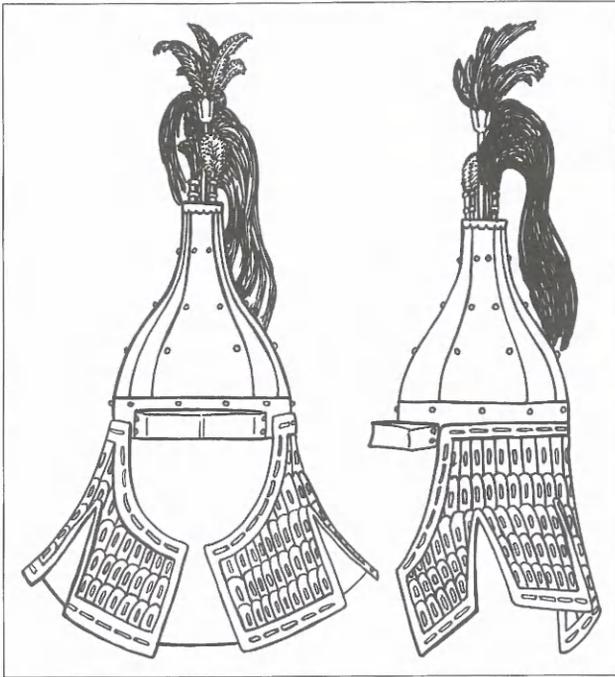


Fig. 1. Reconstruction of a spherical, conical helmet of a Dzungar warrior.



Fig. 3. Reconstruction of a spherical, conical helmet of a Dzungar warrior.

and several European museums were used for the reconstructions.

Thanks to graphic reconstructions and analysis of suits of armour exhibited in the museums of Moscow and Tobolsk, a number of copies of iron helmets and armour made from modern materials were produced.

Using the spherical cylindrical helmets from Dzungar held in these museums a copy was made of an Oirat warrior iron helmet. The dome-shaped headgear consisted of eight plates converging at the top. They were joined together by means of rivets. The top line of rivets was placed on a cylindrical crown, the other two lines on the helmet's dome-shaped top. The top was fastened to the round crown. It had several pipes for plumage made from feathers and horsehair. The top pipe was placed in the centre, the other two on both sides of the top. A wide hoop was riveted to the bottom edge of the helmet. In addition, a box-shaped peak was fastened to the front part of the hoop and lamellar shoulder defences were attached to the hoop on three sides. The shoulder part consisted of five horizontal lines of rectangular plates with round shaped top edges. It was divided into blades. Two of them were placed on the front and covered the neck; two other plates were fixed to the sides and covered the ears; and one plate covered the back of the head. The plates of the shoulder part were joined together by means of leather straps. The blades had a leather lining

(Figs. 1, 3). Tests showed that helmets of this type were possibly worn with a soft leather or cloth cap inside and that they fastened under the chin by means of a leather strap. They also revealed that such a helmet could stand and partly amortize chopping blows struck with side arms. However, it could not stand a direct strike of a spear. What is more, a helmet of this type was quite heavy and could not be worn for a long time. Probably, warriors would put it on right before a battle or an important attack. Thanks to the experiment, we found out that high cylindrical crown did not have any protective functions. On the contrary, it made the helmet less resistant to injury and made it less functional. The shape of the helmet might have helped to identify the military leader and build up the warriors confidence in battle. The lamellar shoulder part was divided into blades in order to make it more comfortable and effective.

Using suits of Tibet armour held in the Hermitage and the Museum of Anthropology and Ethnography in St. Petersburg, a lamellar robe was reconstructed. Tibet warriors continued using this kind of armour up to the beginning of the twentieth century<sup>14</sup>. While making the copy, all the armour details, including the number of iron plates, its size and the number of holes, the

<sup>14</sup> M. V. G o r e l i k, *Ranniy mongolskiy...*, p. 165.



Fig. 2. Reconstruction of lamellar armour of Mongol and Tibet warriors.

structure of the horizontal plates in each part of armour were carefully reconstructed. We also used the same technology and order of assembling and fastening the main parts of the armour. The plates were joined together by means of a silk strap. The protective covering of the armour robe consisted of several parts: a jacket cut along the axis, two shoulder-straps, two leg parts and a cross-shaped detail. The rectangular plates formed partly overlapping horizontal lines. At the bottom of each line, there was a leather edging, sewn up on the plates through holes. The edging helped to make the line a single whole, prevented the clothes from breaking up and injuring the warrior. If the main cord holding the plates together was cut, the edging prevented the armour from breaking up. The above-described experiment showed that the armour did not lose its shape even after several blows struck with a blade. The upper angles of the plates were round, which additionally prevented the clothes from being cut or torn. The top edges and the bottom edges overlapped.

While the warrior put on the armour, the right lap covered the left one. The armour was tightened with a belt. The shoulder parts were worn separately and the leather lining sewn up to the edges. The front part of the armour was a bit shorter than the back part because of differences

in the length of the plates. The total weight of the robe-armour copy was 16.6 kg.

The experiment also showed some peculiarities of its use. The warrior was able to put the armour on himself, but he needed help to attach the shoulder parts, which was not easy, because the warrior had to strap them before wearing. Probably they were first strapped and then put on. Judging by medieval miniatures, this method of putting on shoulder parts was used by Kidan, Zhurchen and Mongolian warriors<sup>15</sup>. Any abrupt gesture caused the shoulder part to fall and uncover the arm. This is why straps were used to tie them to the forearms. Otherwise it would have been difficult for the warrior to move his arms. He needed someone's help to tie the straps. Perhaps, warriors helped each other to put on the armour before a battle. The weight of the armour was evenly distributed over the warrior's shoulders when he used it in foot combat. While riding a horse, the weight was distributed over the warrior's body, back and the horse's croup and as a result the pressure exerted on the shoulder straps was smaller. When such armour was used by a rider, the plates must have been longer and the cross-shaped detail at the bottom part wider. This kind of armour was comfortable when worn on horseback. It was a complementary defence not only for the rider, but for the horse as well. The leg parts widened below the waist to protect the warrior's hips. They did not slide aside and did not uncover the warrior's hips. In addition, they protected the knees and the top parts of the shanks. Lamellar armour was very flexible. The warrior could move, ride and fight easily. The rider could bend a bow, attack with a spear, fence with a saber or a sword. While riding, the plates made a characteristic rustling noise, mentioned in heroic and epic literature<sup>16</sup>. The footman, even without much experience, felt quite comfortable. However, they did feel some discomfort in the shoulder part after wearing the armour for half an hour and if struck with a bladed weapon, when the top part of the breastplate hurt the shoulders. Lamellar armour very effectively protected the warrior's body from blows struck with a bladed weapon. It was less effective if the blow was struck with a spear, where the warrior could be pushed out of the saddle (Fig. 2).

<sup>15</sup> M. V. G o r e l i k, *Ranniý mongolskiy...*, Fig. 2, 1-2.

<sup>16</sup> R. S. L i p e c, *Obraz batira i ego konya v turko-mongolskom epoke*, Moscow 1984, p. 65.

If the plates were damaged or the linking straps and the leather edging torn, the armour could be repaired very quickly. New plates could replace the broken ones; the straps or edging could be tied or sewn up. Because the stitches, the armour became less flexible and less protective. Probably, the plates were not replaced but attached through new made holes in the broken parts. This method of repairing the plates was observed in

Enisey Kyrgyz finds<sup>17</sup>. Undoubtedly, the warriors carried essential tool kits.

The reconstruction of the helmets and armour of Mongol and Tibet warriors using the surviving late medieval specimens revealed the main structural principles and gave the researchers an opportunity to evaluate the development of defensive arms used by the peoples of Central Asia from the modern point of view.

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<sup>17</sup> Yu. S. K h u d y a k o v, *Kirgizi na Tabate*, Novosibirsk 1982, p. 123.