

BLADED WEAPONS OF CENTRAL ASIA IN THE XVIIIth– XXth CENTURIES AS A REFLECTION OF THE REGION'S CULTURAL AND TECHNOLOGICAL TRADITIONS

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Abstract. *The article analyzes the features of the manufacture and decoration of bladed weapons in the khanates of Central Asia from the eighteenth to the twentieth centuries as a significant element of the region's material and spiritual culture. Bladed weapons are examined not only as means of armament but also as objects of social status and artistic expression. Drawing on written, archaeological, and historiographical sources, the study explores the main blade-production technologies, including forging, quenching, and the use of wootz (bulat) steel. Particular attention is paid to the origin and spread of wootz steel, the interaction of local traditions with Indian, Persian, and Ottoman metallurgical schools, as well as the role of trade networks along the Great Silk Road. The article also discusses Central Asian weapons-manufacturing centers and the problem of conflating the terms "wootz steel" and "Damascus steel." It concludes that traditional bulat technologies declined by the nineteenth century and emphasizes the importance of bladed weapons as a historical source.*

Keywords: *bladed weapons, the khanates of Central Asia, bulat, wootz steel, Damascus steel, crucible smelting, arms production, metallurgy, sabres and knives, decorative design of weapons, Akhsikent, Bukhara, Karshi, the Great Silk Road, Oriental arms traditions*

Аннотация. *В статье анализируются особенности изготовления и декорирования клинкового оружия в ханствах Средней Азии XVIII–XX вв. как значимого элемента материальной и духовной культуры региона. Клинковое оружие рассматривается не только как средство вооружения, но и как социально-статусный и художественный объект. На основе письменных, археологических и историографических источников раскрываются основные технологии производства клинков, включая ковку, закалку и использование вутцевой (булатной) стали. Особое внимание уделяется происхождению и распространению вутцевой стали, взаимодействию местных традиций с индийскими, персидскими и османскими металлургическими школами, а также роли торговых связей по Великому шёлковому пути. Рассматриваются оружейные центры Средней Азии и проблема смешения понятий «вутцевая» и*

(11th international scientific and practical conference)

«дамасская» сталь. Делается вывод об упадке традиционных булатных технологий к XIX веку и значении клинкового оружия как исторического источника.

***Ключевые слова:** клинковое оружие; ханства Средней Азии; булат; вутцевая сталь; дамасская сталь; тигельная плавка; оружейное производство; металлургия; сабли и ножи; декоративное оформление оружия; Ахсикент; Бухара; Кариш; Великий шёлковый путь; оружейные традиции Востока.*

Introduction. Bladed weapons played an important role in the culture of the peoples of Central Asia, functioning not only as means of armed defense but also as significant markers of social status, professional craftsmanship, and artistic traditions. In the khanates of the region during the eighteenth to the twentieth centuries, the production and decoration of sabers, daggers, and knives experienced notable development, combining the functional qualities of the blade with a high level of aesthetic refinement. Particular attention was paid to the quality of steel, blade form, and decorative elements, including the ornamentation of hilts and scabbards, engraving, inlay, and enamel work.

Historiographical and archaeological analysis indicates mutual influences among Persian, Indian, Ottoman, and local Central Asian weapons traditions, which contributed to the formation of stable regional types of bladed weapons. The study of forging techniques, heat treatment, and decorative practices makes it possible to reconstruct the social, economic, and symbolic contexts of weapons production in the khanates of Central Asia.

The key material used for blade manufacture was wootz (bulat) steel, produced by the method of crucible smelting. This technology, believed to have originated in India in the fourth century BCE, made it possible to obtain high-carbon steel with a homogeneous structure combining hardness and elasticity. The characteristic surface pattern of the blades was formed during crystallization and forging and served as an indicator of both material quality and the skill of the bladesmith. Wootz was widely exported to Persia, the Middle East, and Central Asia, where it was valued as both a functional and status material.

Archaeological evidence, particularly crucible finds from Akhsikent in the Fergana Valley, confirms the existence of local centers of crucible metallurgy in Central Asia. Through the trade routes of the Great Silk Road, blades and steel were distributed to regions lacking their own metallurgical production, including Damascus, which contributed to the emergence of the term “Damascus steel,” associated more with a market of distribution than with a place of manufacture.

In the khanates of Central Asia, bladed weapons served not only military but also ceremonial functions. They were actively used within systems of diplomatic gift

(11th international scientific and practical conference)

exchange, as evidenced by Russian written sources of the sixteenth and seventeenth centuries. Bukhara, Kokand, and Khiva were important centers of blade finishing and artistic decoration, whose products were exported to Persia and Arabia and highly valued beyond the region. Despite the gradual loss of traditional bulat-production technologies by the eighteenth and nineteenth centuries, bladed weapons retained their significance as symbols of prestige, cultural continuity, and the artisanal heritage of Central Asia.

Materials and Methods

Bladed weapons have always occupied an important place in the lives of the peoples of Central Asia, serving not only as means of armed defense but also as indicators of social status, the skill of armorers, and artistic traditions. During the eighteenth to twentieth centuries, the khanates of the region witnessed a flourishing of crafts related to the manufacture and decoration of sabers, daggers, and knives, in which artistic aesthetics were combined with the functional qualities of the blade. Particular attention was paid not only to the quality of the metal and the durability of the weapon but also to decorative elements, including the ornamentation of hilts and scabbards, engraving, enamel work, and inlay.

An analysis of historiographical sources makes it possible to trace how the traditions of Persian, Turkish, and local Central Asian schools of arms craftsmanship mutually influenced and enriched one another, resulting in the formation of distinctive national types of bladed weapons. The study of manufacturing techniques, blade forms, materials used for hilts and scabbards, and decorative methods allows for the reconstruction of the cultural and social contexts in which these objects were created. This approach reveals not only technological aspects but also the aesthetic, symbolic, and economic functions of bladed weapons in the khanates of Central Asia.

The Manufacture and Decoration of Bladed Weapons in the Khanates of Central Asia (XVIII—XX Centuries) as a Reflection of the Region's Cultural and Technological Traditions. The manufacture and decoration of bladed weapons in the khanates of Central Asia during the eighteenth to twentieth centuries constituted a complex and multi-layered process closely connected with the cultural, military, and social characteristics of the region. Bladed weapons fulfilled not only the practical function of instruments of warfare but also served as symbols of status, honor, and social affiliation. Their production combined advanced technical skills with high levels of artistic craftsmanship and reflected the influence of both local and external cultural traditions. An analysis of historiographical and archaeological sources makes it possible to identify the distinctive features of blade-manufacturing technologies in this region.

The production process required a high degree of expertise from blacksmiths and craftsmen, as well as strict adherence to traditional methods of forging, quenching, and

(11th international scientific and practical conference)

heat treatment of metal. The technological practices of Central Asian masters were influenced by Persian, Indian, and Ottoman metallurgical schools, a factor particularly evident in the use of high-quality steel and in the artistic decoration of blades¹.

One of the key metallurgical technologies used in blade production was crucible smelting—an ancient method of metal production dating back to the Bronze Age.² Crucible smelting was initially used for the production of copper and bronze in the Ancient Near East and later became the basis for producing high-carbon steel known as wootz (or bulat)³. The most significant achievements in crucible metallurgy were made by Indian craftsmen, whose techniques influenced the development of metallurgy in other regions of Asia. According to the study by V. Chepiga, presented in the article *“Indian Wootz Steel — the Enigma of Ancient Metallurgists,”* the technology for producing wootz is believed to have emerged in the fourth century BCE and remains not fully understood to this day⁴.

Wootz Steel: Technology, Distribution, and Significance in Blade Production. Wootz steel was highly valued in the medieval and late medieval world for its unique combination of strength, flexibility, and the characteristic surface pattern that appeared after forging and heat treatment. Its production was based on the technology of crucible smelting, in which iron and carbon were melted in hermetically sealed crucibles made of refractory clay. The seal was achieved by tightly fitting the lid and coating the joints with clay, preventing the ingress of oxygen and creating a controlled reducing atmosphere inside the vessel. Crucible smelting allowed the production of high-carbon steel with a homogeneous structure and excellent mechanical properties. Archaeological studies in southern India have revealed fragments of such crucibles and metallic residues, confirming the widespread use of this technology in antiquity.

The peak of wootz production occurred during the medieval period, when Indian craftsmen significantly refined smelting and forging techniques. From the resulting ingots—known as “cakes”—blades were forged that combined outstanding combat performance with high artistic value. During forging, the characteristic wavy pattern appeared on the blade’s surface, caused by carbide inclusions evenly distributed throughout the steel structure. This pattern not only added aesthetic appeal but also indicated the superior functional qualities of the blade.

¹ Srinivasan, S. & Ranganathan, S. Wootz Steel: An Advanced Material of the Ancient World — охватывает технологию производства, международную торговлю, механизм формирования ведомых структур и значение для развития материаловедения.

² Bronson, B. The making and selling of wootz, a crucible steel of India, *Archaeomaterials*, 1 (1986), pp. 13-51 — история технологии и её распространение.

³ Srinivasan, S. Wootz crucible steel: a newly discovered production site in South India, *Papers from the Institute of Archaeology, UCL*, 5 (1994), pp. 49-61

⁴ Srinivasan & Griffiths, D. South Indian wootz: evidence for high-carbon steel from crucibles from a newly identified site..., *Materials Research Society Symposium Proceedings*, Vol. 462 (1997)

Blades made from wootz steel were distinguished by a unique balance of hardness and elasticity, allowing the weapon to maintain its sharpness while withstanding high mechanical stresses. Historical tradition includes legends of blades capable of cutting through hard materials without losing their edge, attesting to the high reputation of this steel in military contexts. Wootz steel was exported from India to neighboring regions, including Persia, the Middle East, and Central Asia. Trade routes connecting the ancient East facilitated not only the dissemination of the steel itself but also the technological knowledge associated with its processing. In the khanates of Central Asia, bladed weapons made from wootz were valued as highly functional and prestigious items, serving both decorative and ceremonial purposes⁵.

However, by the twelfth century, wootz production in India began to decline gradually, and by the eighteenth century, traditional smelting methods had been almost entirely lost. This decline is believed to have been caused by the depletion of accessible natural resources, particularly ores with optimal carbon content and impurity levels, changes in trade routes, and colonial policies that disrupted local artisanal traditions⁶.

It should be noted that in both scholarly and popular literature, the terms “wootz steel” and “Damascus steel” are often conflated. Despite their visual similarity—namely, the presence of patterned surfaces—their origins and production technologies are fundamentally different. Wootz steel was a homogeneous crucible steel, with its structure formed during the crystallization of the ingot, whereas Damascus steel was produced through the forge-welding of multiple layers of different types of steel and iron. Such conflation of terms frequently leads to misinterpretations when describing historical artifacts, particularly in museums and private collections⁷. Traditionally, Indian craftsmen supplied wootz in the form of small, disc-shaped ingots resembling washers, which facilitated both their transportation and subsequent forging in weapons workshops in other countries⁸.

In Central Asia, the city of Akhsikent in the Fergana Valley was long a major trade and craft center, as well as a hub of metallurgical production. According to recent research by British archaeologists, highly valuable products of the time—weapon-grade steel and blades—were exported from Akhsikent to the Middle and Near East. Excavations of the Akhsikent settlement in layers dating to the 9th–13th centuries

⁵ Сринивасан, С. (1994). Тигельная сталь Вутца: недавно обнаруженное место производства в Южной Индии. с. 56-61.

Материалы Института археологии, 5, с. 49-61.

⁶ Ранганатан, С., и Шринивасан, С. (2006). Повесть о Вутц Стил. Резонанс, 11, 67-77.

⁷ Бронсон, Б. (1986). Производство и продажа Wootz: тигельная сталь Индии. Археоматериалы, 1 (1), 13-51.

⁸ Сринивасан, С., и Гриффитс, Д. (1997). Производство тигельной стали в Южной Индии: предварительные исследования...

Материалы MRS, 462, 75-87.

uncovered thousands of fragments of refractory vessels—crucibles—bearing traces of slagged black metal.

This evidence indicates that Akhsikent had a crucible-based production of high-quality steels. The furnaces were likely fueled with the wood of arči, a mountain juniper growing on the ridges of the Western Tien Shan surrounding the Fergana Valley. Arči wood, which burns at very high temperatures, had been used by Central Asian metallurgists since ancient times. According to British archaeological estimates, trade caravans annually exported up to ten tons of steel and five thousand blades from Akhsikent, which then traveled along the Great Silk Road to Damascus—a city without its own steel-making workshops, yet renowned throughout the medieval East and Europe for its weapons market. Professor Thilo Rehren argues that the term “Damascus steel” arose not from the place of manufacture but from the popularity of Damascus as a market for swords and sabers, the quality of which was soon tested by the Crusaders⁹.

Based on the data presented by F. A. Zhil, who published in 1860 the collection *Tsarskoye Selo Museum* with a compilation of arms, it is reported that researchers Chardin and Tavernier expressed the view that Eastern blades were made of bulat and Damascus steel. The blades were produced from Indian steel, which was manufactured in the Golconda region, the method of production being closely guarded as a secret. Both researchers provide interesting details indicating that Indian steel was sold to the Persians and other peoples in small ingots, roughly the size of a coin. In their writings, they describe in detail the forging process as practiced by Persian masters. Chardin and Tavernier note that the Persians classified up to ten different types of blades, each with distinct names.

One type of bulat, they called “yellow sand,” a blade very rarely seen, which indeed exhibits a golden hue. In their accounts, both researchers limit their discussion to four main types of bulat, which, according to Chardin and Tavernier, Persian and Turkish craftsmen recognized as the principal varieties.

1. **“Kirk-Nerdevan”** (literally “forty steps,” in Persian: *Kirk-Nerdeban*). This pattern resembles transverse stripes and scars visible even on the thinnest blades made of grey or black bulat. These intersecting stripes are nothing other than strands of steel fibers running longitudinally along the blade. Across the width of the blade, other fibers interweave with these horizontal stripes, forming a pattern resembling a cord twisted twenty times. As a result, the blade exhibits a stepped-ladder pattern. Twenty twists on each side total forty steps, which explains the overall name “Kirk-Nerdevan”¹⁰.

⁹ Г. Нурматова. Средневековый Ахсикент (IX -XII вв.) Научный сборник., Учёные записки., С.123.
<https://cyberleninka.ru/article/n/srednevekovyy-ahsikent-ix-xii-vv>.

¹⁰ Царскосельский музей с собранием оружия, принадлежащего государю императору», автор — Ф. А. Жиль. Спб. 1860 г. С 214 – 215./ Источник Chardin. Томъ III. стр. 29. 113. 114. Лмстердамское пздапіе 1733. Tavernier Томъ I. стр. 74. 673. Парижское вздапіе, 1692.

2. **“Kara Khorasan”** – literally “Black Khorasan.” These blades, originating from Eastern Persia, are made of nearly black steel with countless fine strands. These two types of bulat are considered the finest.

3. **“Kara-Taban”** – literally “black and shiny.” This name refers to the bright, somewhat broad streaks in this bulat, which exhibits a gray-black sheen.

4. **“Sham”** – the Arabic name for Syria, and by extension, for the city of Damascus. Under this designation, any bulat or Damascus steel was understood, including even the poorest-quality Constantinople bulat¹¹.

The following discussion focuses on the renowned Persian master Asadullah, who served as a personal bladesmith for Shah Abbas of Persia. A blade made from the highest-grade bulat, **“Kirk-Nerdevan,”** bears Asadullah’s signature. He marked his works with the term *Isfahānza*, indicating that the blade was made in Isfahan. The master also inscribed the following text on the blade: *“Abbas, servant of the King of the Chosen,”* referring to Ali. It was common for Asadullah to place his own name alongside that of his sovereign.

It is presumed that this saber once belonged to Shah Abbas himself and was captured after the fall of the Ardebil fortress by a Russian detachment led by Count Sukhtelen. On the blade, there is a small quadrangular mark, known in Arabic as a *“Bedukh”*. This mark is considered a mystical symbol representing a guiding spirit and was often used in Muslim correspondence as a means of placing the letter under the protection of this spiritual entity. On sabers, the *Bedukh* expresses wishes for happiness or success to the recipient of the weapon. Typically, four letters are inscribed within this quadrangular mark, and sometimes even numbers (2, 4, 6, 8) are included. In Arabic tradition, these numbers are considered auspicious and correspond to the four letters (B, D, V, Kh), which together form the word *BEDUKH*. This method of inscribing letters or numbers functioned as a talisman among Muslims.

4	2
8	6

Since Arabic script is written from right to left, the arrangement of the letters appears as shown in the figure. Arabs and Persians also placed the *Bedukh* on letter envelopes to convey wishes for happiness and well-being. The distribution of bulat steel in the East was extensive: Indian ingots passed through Persia and from there were further distributed to other countries¹². Central Asian masters were no exception. Purchasing bulat steel through merchants, palace weaponsmiths forged blades from the

¹¹ Царскосельский музей с собранием оружия, принадлежащего государю императору», автор — Ф. А. Жиль. Спб. 1860 г. С 215 – 216.

¹² Царскосельский музей с собранием оружия, принадлежащего государю императору», автор — Ф. А. Жиль. Спб. 1860 г. С 218.

ingots, producing both short-bladed and long-bladed weapons, often with decorative elements, especially when knives, daggers, or sabers were commissioned as diplomatic gifts.

According to D. Miloserdov, as early as the 16th century, Russian tsars received diplomatic gifts from the khans that included bulat blades. For example, a preserved petition (presumably a formal letter) from the Bukharan envoy Muhammad-Ali to Russian Tsar Fyodor Ivanovich, dated 1585, reads:

*"To the Tsar, Sovereign Great Prince Fyodor Ivanovich of all Russia, greetings from the Bukharan envoy. Our sovereign Abdullay, Tsar of Bukhara, has sent gifts to you, sovereign. Today, as I am traveling in your realm in Kazan, our sovereign has sent these gifts to you, sovereign: a helmet of bulat steel adorned with gold and engravings, a bulat saber adorned with gold, a bulat knife with a black fish-tooth handle adorned with gold, and bulat scabbards adorned with gold and silver fittings"*¹³.

In written sources from the 16th to the 19th centuries, the bladed weapons of the Central Asian khanates are repeatedly mentioned as significant diplomatic and trade commodities. For instance, in 1585, the Khan of the Khiva Khanate sent an embassy to Tsar Fyodor Ivanovich with lavish gifts, among which were bulat sabers, knives, and other weapons decorated with gold and painted designs. Such gifts indicate the high status of bulat weapons and their value in interstate relations.

In 1669, an embassy led by Abdullaziz Khan from the Bukhara Khanate was sent to Moscow to Tsar Alexei Mikhailovich. The gifts included sabers, bulat strips, and Bukharan knives, whose value was recorded in the documents. Although the knives were described as "Bukharan," their origin was not always local: a significant portion of the blades entering the Central Asian khanates came from India, Persia, or the Ottoman Empire, reflecting the active trade networks of the region.

During the 17th–19th centuries, Bukhara was an important center for processing bulat steel. Knives and sabers produced here combined high functional qualities with artistic decoration. Weapons were made both from local steel and from re-forged broken Indian blades. The value of these items depended on quality: a Bukharan saber was significantly cheaper than a Persian one, indicating differences in steel grade and manufacturing techniques.

The city of Karshi played a major role in the artistic finishing of blades, hosting developed artisan workshops and trade markets. Karshi knives with gold- and silver-inlaid handles were in demand not only within the khanate but also abroad, exported

¹³ Д.Ю.Милосердов. Оружие и доспехи в ханствах Средней Азии (Бухара, Коканд, Хива) конца XVIII - начало XXв. Том I.с. 416 (Источник Торговые сношения Московского государства с народами Средней Азии XVI – XVII вв.// Торговля с Московским государством и международное положение Средней Азии в XV – XVII вв.. мат – лы по истории Узбекской, Таджикской и Туркменской ССР//Труды Историко- археологического института и Института востоковедения,мат-лы по истории народов СССР. Вып.3. Ч.1. Л.; Изд.АН СССР, 1932. С 98.

to Persia and Arabia, where their price increased several times. Particularly valued were blades made from Damascus and bulat steel.

By the mid-19th century, Bukhara became the primary center for bulat processing. Bulat arrived mainly in the form of round ingots, which were drawn into strips for blades. According to N. F. Massalsky and P. P. Butenev, some of the bulat was supplied via Persia and likely had Indian origins. At the same time, a decline in steel quality was noted compared to earlier examples, which was attributed to the loss of traditional crucible-smelting techniques.

Bukharan blacksmiths distinguished up to nine grades of bulat, classifying them according to pattern and quality. Preference was given to even and well-defined patterns, considered a mark of the smith's skill. The forging process involved low-temperature heating, specific oil-based quenching, and subsequent hand polishing. Bulat patterns were revealed through etching with a solution of iron sulfate.

Despite the presence of highly skilled masters, by the end of the 19th century the overall quality of bladed weapons in the region had declined. According to I. I. Krause, most blades were made from soft steel or iron, with their durability and reparability compensating for the lower material quality. High-quality blades, most often of Persian origin, were particularly prized, passed down as heirlooms, and rarely appeared on the market. By the 1870s, the traditions of producing and re-forging high-grade bulat in Bukhara had largely disappeared, surviving only in a few artisanal centers.

Conclusion

The analysis allows us to conclude that bladed weapons in the Central Asian khanates of the 18th–20th centuries represented a multifaceted cultural-historical phenomenon, combining utilitarian, social, symbolic, and artistic functions. They served not only as means of armed defense but also as important indicators of social status, military honor, and craftsmanship, while reflecting the aesthetic ideals of their time.

The production of bladed weapons in the region was a complex technological process requiring highly skilled smiths and strict adherence to traditional methods of forging, hardening, and heat treatment. Intercultural contacts played a significant role in the development of arms production: the techniques and artistic approaches of Persian, Indian, Ottoman, and local Central Asian schools of weapon craftsmanship were in constant interaction, contributing to the formation of unique regional types of blades.

Crucial importance in blade production was held by crucible metallurgy and the use of wootz (bulat) steel, distinguished by its high mechanical properties and characteristic patterns. Historiographical, archaeological, and written sources testify to the wide distribution of wootz in Central Asia, both in the form of finished blades and ingots transported along trade routes from India and Persia. Regional metallurgical

(11th international scientific and practical conference)

centers, such as Akhsikent and Bukhara, played a key role in processing, forging, and artistically decorating high-quality weapons steel.

The sources also indicate that by the 18th–19th centuries, the region experienced a gradual decline in traditional high-quality bulat production. The loss of crucible-smelting secrets, declining raw material quality, and changing economic conditions led to a reduction in the number of masters capable of producing blades of the former standard. During this period, re-forging broken blades and the use of imported steel were widely practiced, which did not always preserve the original material properties.

An important conclusion is that the decorative aspects of bladed weapons—engraving, inlay, use of precious metals, symbolic inscriptions and signs (including talismanic marks)—played a role no less significant than the functional characteristics of the blade. Decoration emphasized the owner's status, the sacred significance of the weapon, and its purpose in diplomatic and ceremonial contexts, particularly in the practice of embassy gifts.

Thus, bladed weapons of the Central Asian khanates of the 18th–20th centuries should be regarded as a vital source for studying technological traditions, artistic culture, trade networks, and social relations in the region. A comprehensive approach, based on the analysis of written, archaeological, and museum sources, allows for a deeper understanding of the role of weapon craftsmanship in the history of Central Asia and its significance within the broader Eurasian cultural-historical space.

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