

MIRZO ULUG`BEK'S LIFE AND HIS SCIENTIFIC LEGACY

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**ANNOTATION:** This article contains information about the youth of the great Timurid prince Mirzo Ulugbek, his family, his interest in science, his rise to power, information about state administration, and the methods he used in state administration. The names of Mirzo Ulugbek's teachers, Ghiyosiddin Jamshid Koshiy, who worked with him, and other great figures are mentioned. Ulugbek also gives clear thoughts about the madrasas built by him in Bukhara, Samarkand, and Gijduvan, the "Registan", the history of its construction, and the equipment located in it. In particular, his rational policy in state administration is discussed separately.

**KEYWORDS:** Mirzo Ulugbek, grandfather Amir Temur, father Shahrukh Mirzo, mother Gavharshod Begim, Ghiyosiddin Jamshid Koshi, Mawlana Ahmad, Qazizoda Rumi, Bukhara, Samarkand, Registan, Zayniddin Vasifi, Movaunnahr, Khurasan.

**ANNOTATSIYA:** Ushbu maqolada buyuk Temuriy shahzoda Mirzo Ulug`bekning yoshlik yillari, oilasi, ilm-fanga qiziqishi, hokimyat tepasiga kelishi, davlat boshqaruvi haqida, davlat boshqaruvida qanday usullardan foydalangani haqida ma`lumotlar qayd etilgan. Mirzo Ulug`bekning ustozlari, u bilan birga ijod qilgan G`iyosiddin Jamshid Koshiy va boshqa buyuk shaxslar ismlari tilga olinadi. Ulug`bek tomonidan Buxoro, Samarqand va G`ijduvonda qurilgan madrasalar haqida, "Registon", uning qurilish tarixi, uning ichida joylashgan asbob-uskunalar haqida ham aniq fikrlar aytilgan. Ayniqsa, davlat boshqaruvidagi oqilona siyosatiga alohida to`xtalib o`tilgan.

**TAYANCH SO`ZLAR:** Mirzo Ulug`bek, bobosi Amir temur, otasi Shohruh Mirzo, onasi Gavharshod Begim, Gi`yosiddin Jamshid Koshiy, Mavlona Ahmad, Qozizoda Rumi, Buxoro, Samarqand, Registon, Zayniddin Vosifiy, Movaunnahr, Xuroson.

**АННОТАЦИЯ:** В данной статье содержится информация о юности великого тимуридского князя Мирзо Улугбека, его семье, его увлечении наукой, восхождении к власти, государственном управлении и методах, которые он использовал в управлении государством. Упоминаются имена учителей Мирзо Улугбека, Гиосиддина Джамшида Кошия, работавшего с ним, и других выдающихся личностей. Улугбек также дает четкое представление о построенных им медресе в Бухаре, Самарканде и Гиждуване, о «Регистане», истории его строительства и размещенном в нем оборудовании. В частности, подчеркивается его рациональная политика в государственном управлении.

**КЛЮЧЕВЫЕ СЛОВА:** Мирзо Улугбек, дед Амир Темур, отец Шахрух Мирзо, мать Гавхаршод Бегим, Гиёсиддин Джамшид Коши, Мавлана Ахмад, Газизода Руми, Бухара, Самарканд, Регистан, Зайниддин Васифи, Мовауннахр, Хорасан.

A great scientist of the Eastern Renaissance, a great statesman, a great representative of the Timurid dynasty, an astronomer and mathematician, Mirzo Ulugbek left his name as an enlightened representative of his dynasty, a great person who contributed to the development of science at that time. Mirzo Ulugbek occupies a special place in Uzbek and world history as a



great astronomer, mathematician and enlightened ruler. He made a great contribution to the development of science, especially in the field of astronomy. The Eastern Renaissance period became even more prosperous thanks to the observatory he built in Samarkand and the scientific school he founded. Mirzo Ulugbek left his name in history not only as a statesman, but also as a scientist who valued science. His scientific legacy has not lost its significance today and continues to encourage young people to seek knowledge. His full name was Muhammad Taragay Shahrukh oglu, and Ulugbek was a nickname given to him by his grandfather Amir Temur. Mirzo Ulugbek was born on March 22, 1394, in the winter quarter of Amir Temur's empire, Sultania, in present-day Iran. At that time, his grandfather Amir Temur was besieging the Mordin fortress in Iraq. According to the historian Sharafiddin Ali Yazdi's "Zafarnoma", he came to Amir Temur with the good news of Ulugbek's birth and that astrologers had predicted that this grandson would become both a scholar and a ruler in the future. In his joy, Sohiqiran stopped the siege of Mordin fortress and canceled the tribute imposed on its people. His father was the fourth son of Amir Temur, Shahrukh Mirzo. His mother was Gavharshod Begim, daughter of Ghiyosiddin Tarkhan.

Amir Temur paid special attention to the upbringing of his beloved grandson Muhammad Taragay from infancy under the guidance of knowledgeable teachers. Until the age of eleven, he was raised by his grandmother Saraymulkhanim, and was noted as a famous scholar. Mirzo Ulugbek grew up from his youth in the environment where he lived, together with the great scholars of his grandfather's court, including such outstanding astronomers and mathematicians as Mevlana Ahmad and Qazizoda Rumi, who compiled biennial tables of planetary movements. His teachers were also very knowledgeable and strict. The childhood of the young Timurid prince was spent mainly on the western border of the Amir Temur's empire, in the city of Sultania, in the territory of present-day Iran. He was not limited only to studying, but from his youth he was engaged in physical exercises such as horse riding, fencing, archery, and swimming. He was taught a strict daily routine, and along with religious knowledge, he also deeply mastered secular sciences. His memory was strong, his mind was sharp, and his will was strong. He perfectly learned Arabic, Persian, Turkish, Mongolian, and Chinese. He memorized the Holy Quran in seven different recitations. Mirzo Ulugbek had a strong analytical mind and could perform complex mathematical operations in his mind. "As one of the representatives of Ulugbek's astronomical school, Ghiyosiddin Jamshid Koshi, wrote with amazement, one day Ulugbek measured the height of the sun on horseback in a unit of time and calculated the angle of deviation of the incident light relative to the plane by trigonometric method from memory. After the death of Amir Temur in 1409, the father of his fourth son, Mirzo Ulugbek, Shahrukh Mirzo, was recognized as the supreme ruler of the Timurid state. Until then, he had been acting as the governor of Khorasan. Shahrukh Mirzo entrusted Ulugbek with the administration of Maverounnahr, along with the Turkestan region. "Ulugbek, a teenager, initially governed these territories with the help of Shahmalik, but from the age of 19 began to independently govern<sup>1</sup> At this time, Ulugbek was not only engaged in state affairs, but also developed science, copied valuable written monuments and promoted them among the people, built madrasas, mausoleums, mosques and khanqahs. Mirzo Ulugbek built a madrasa in Samarkand in 1417-1420, which became the first ensemble to be built in the Registan. Ulugbek invited many astronomers and mathematicians of the Islamic world to this madrasa. "The inscription "The pursuit of knowledge is obligatory for every Muslim" has been preserved on the facade of his madrasa in

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<sup>1</sup> Mirzo Ulugbek. History of Four Nations. - Tashkent. Chulpon, 1994. p. 78.



Bukhara<sup>2</sup>. One of the rare examples of 15th-century architecture built during the reign of Ulugbek in Samarkand is the Ulugbek Observatory. This structure was built on the Kohak Hill in 1428-1429 by order of Ulugbek. Ulugbek did not just build this madrasa, but approached this work as an event of incomparable importance in his life. According to historian Zayniddin Vasifi, Ulugbek personally supervised each stage of the construction of the madrasa, even clearly specifying who would be the director, who would teach, and what knowledge and qualification requirements the madrasas should meet after the building was completed. "According to the information in the work "Boburnoma" about the Mirzo Ulugbek Observatory, it was built in 3 floors with a height of 30.4 meters<sup>3</sup>". It contained more than ten different astronomical devices and instruments. The most important of them is a quadrant or sextant consisting of a double arc with a radius of 40.2 meters. The southern part of this quadrant is located underground, and the rest is located in the north, about 30 meters above ground level. One degree of arc in the circumference of the instrument corresponds to 701.85 mm. and one minute of arc corresponds to 11.53 mm. The observatory was also unique in terms of instrumentation in the Middle Ages. The instrument made it possible to measure the main constants of astronomy - the angle between the equator and the ecliptic, determine the annual precision constant, the duration of the tropical year, and other fundamental astronomical constants. The observatory had small instruments: an armillary sphere, measuring instruments consisting of 2, 4 and 7 rings, a triangulation, sun and star clocks, an astrolabe, etc. With the help of these scientific instruments, the Sun, Moon, planets and other individual stars were recorded.

The observatory also had various other instruments. Including:

1. Zat-al-halak-armilla sphere (ring), consisting of several rings depicting circles in the celestial sphere, with the help of rings it is possible to observe the planets.
2. Zat-al-shubatayn - triquetr (triangular), an ancient aeronomical instrument consisting of two sectors.
3. Zat-as-suk-batayni - diopter.
4. Shamila - a universal instrument used instead of astrolabe and square.
5. Ruhama - a marble tablet - a sundial.
6. Gnomon - a measuring instrument.
7. Kura - falakiya - a celestial globe.

The construction of the observatory and its equipment with excellent instruments for observing the sky indicate that Mirzo Ulugbek and the representatives of his scientific school possessed unsurpassed knowledge not only in astronomy, but also in the invention of complex

<sup>2</sup> In memory of Amir Temur and Ulugbek's contemporaries. - Tashkent. Teacher. 1996. p. 45.

<sup>3</sup> Babur Zahiriddin Muhammad. Baburnama / Prepared by Porso Shamsiev. Second edition. – Tashkent: Yulduzcha, 1990. – 368 p.



astronomical measuring and calculating devices. The fact that during the long reign of Mirzo Ulugbek there were no mass protests in the country testifies to his being a fair and skillful statesman. During 1428-1429, he carried out a monetary reform and introduced new copper coins of high value into circulation. As a result of the tax reform he carried out, the amount of land tax was reduced, and the amount of the "tamga" tax on trade and handicraft products was slightly increased. According to the famous poet and writer Zayniddin Mahmud Vasifi (1485-1566), Mirzo Ulugbek received citizens on one day of the week at their personal request and answered their questions. It was on one of these days that a man came to Ulugbek Mirzo with a complaint. He said, "My king, a difficult matter has befallen me and a strange incident has occurred that my mind and even the minds of all other wise men cannot fathom." This incident is as follows: "I am originally from Iraq. I was traveling to Samarkand with a caravan of merchants from Khorasan. When our caravan reached the banks of the Jayhun River, I secluded myself and took off my clothes. There was a piece of precious ruby, which I wrapped in a piece of leather and tied around my wrist. Then I went down into the river. After I got out of it, I could not find a single piece of ruby. I made it my honor to ask and inspect it from one of the caravan's people." Then the king said, "You must be patient for a year. If your goods are found, you will get what you want, if not, you will take from me whatever its value is." Then the man knelt down and worshiped the king and left his presence. His Majesty the king summoned the chief of the treasury and ordered him to write a list of people who were required to pay taxes from all the provinces in Nastaliq script. The king checked the list and ordered a similar list to be drawn up after a year. Then he compared the two lists and saw that a man from Karakul had paid 50 tanga in taxes last year, and this year it had reached 500 tanga. After that, the king ordered the guards to bring this man without telling anyone. When the man arrived, the king asked him: "What is the reason for this difference? What made you so rich and prosperous? Did you find wealth, or did you steal someone's house, or did you inherit a greater fortune? Or did you acquire such wealth by the grace of God? Tell the truth!..." Then he replied: "I am an ordinary weaver. I am originally from Karakul. One day I was busy with my work, and there was a tree near my shop. I saw a hakka sitting on that tree, biting a piece of something. Suddenly, the thing fell out of its mouth, and the hakka flew up. I stood up, took it in my hand. It was a piece of leather, so I tore the leather. Inside I found a piece of ruby, the sun was amazed by its bright rays, and from its jealousy-inducing glow, ruby beauties would blush and fall down. I thought that the ruby was a blessing from God and considered it his great gift. At that moment I left for Samarkand and took it to the merchant, because "the jeweler knows the value of gold, and the merchant knows the value of ore. The merchant asked me where I got the ruby. I replied: "What are you doing digging this up? If you are a buyer, take it, if not, return it." Then I bargained and sold this ruby for one thousand five hundred tange and went to the market and bought a slave, a concubine, a house and zebu-jewelry, a horse and a saddle and harness. Whoever asked me about this incident, I said, "I had a generous relative in Samarkand, and there was no heir except me. He died, and all this was inherited from him." After this incident, His Majesty Ulugbek ordered to find this ruby and return it to its owner. Mirzo Ulugbek, who left an incomparable mark on history with his wise thoughts and the great buildings he built, died in Samarkand on October 27, 1449.

In short, there have rarely been rulers in history with such high talent and potential as Mirzo Ulugbek. The life span given to them by Allah is also short. Even in such a short time, such great people are able to leave a great name for themselves, and we are trying to show the right path to our youth. Although our grandfather Mirzo Ulugbek lived only 55 years, the scientific heritage he left is still being used by the world today. We, the current generation, should not only be proud of the unique creative work of our great grandfather, but also aim to strive for high



intellectual heights by studying science. Only then will the glory of our people and our homeland shine again as it did during the time of our great grandfathers. Great people like Mirzo Ulugbek will grow up.

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