



THE LIFE OF MIRZO ULUGBEK AND HIS CONTRIBUTION TO THE DEVELOPMENT OF SCIENCE

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Annotation: *This article examines the significance of Mirzo Ulugbek in the field of national pride and science. As one of the great historical figures of Uzbekistan, Ulugbek is not only a great astronomer and mathematician, but also a figure who made a great contribution to the development of culture and science in his time. The study of the life and scientific and educational heritage of Mirzo Ulugbek includes an in-depth analysis of his personality and contribution to science. He is one of the greatest figures in the history of Uzbekistan, known for his discoveries in astronomy and mathematics. The monuments and scientific research built in Samarkand are associated with his lofty ideas in the field of culture and science. The successor of the Timurid dynasty, who ruled Movarunnakhr for more than 30 years, was forced to spend the rest of his life far from the limelight due to the rebellions, intrigues and betrayals of the representatives of the dynasty. Despite the military uprisings organized by his blood relatives, the scholar was able to leave behind a huge cultural heritage. Mirzo Ulugbek's innovative approaches in his work and his desire to develop knowledge serve as a source of inspiration for the modern generation. His legacy affects not only the Uzbek people, but also all of humanity. Studying the life and work of Ulugbek helps to revive his scientific achievements and ideas of enlightenment.*



Keywords: *Mirzo Ulugbek, Timurid dynasty, Samarkand, astronomy, mathematics, observatory, Zij-i Ulugbek, scientific heritage, enlightenment, medieval science, astronomical instruments, cultural development, statesmanship.*

Introduction. In one of his speeches, the President said: “Mirzo Ulugbek was not only a great scientist of his time, but also a great statesman who raised enlightenment to the highest level of value. He made unique discoveries in the fields of science, especially astronomy and mathematics, and made a huge contribution to the development of science throughout the world”. Shavkat Mirziyoev recognizes Mirzo Ulugbek not only as a great astronomer and mathematician, but also as a truly enlightened statesman. Mirzo Ulugbek, whose full name is Mukhammad Taragay ibn Shahrukh ibn Temur, was born on March 22, 1394 in the city of Sultania. The period of his birth coincides with the era of the Great Sakhbikiran Amir Temur, at which time Amir Temur was conducting a military campaign aimed at capturing the “Morden” fortress. Also, on the same date, another son of Amir Temur, Umar Sheikh Mirzo, died in the “Kharmatun” fortress, which had a great impact on Amir Temur’s military career. As I.A. Khamraev writes in his book “The Era of the Timurids and Mirzo Ulugbek”, which analyzes the history of the Timurid dynasty and the role of Ulugbek, when the young prince was born, this event was of great importance for Amir Temur and his family, because the birth of a new generation during the military successes of his grandfather and other family members was a source of hope and joy. Amir Temur, while fighting, was overjoyed by the birth of his precious grandson, and this event brought a new spirit to his campaigns. Mirzo Ulugbek, the son of Shakhrukh Mirzo, was welcomed by Amir Temur with great expectations. History has witnessed the decision of Amir Temur to liberate the Morden fortress, which he had been trying to subdue for years, in honor of his grandson, which further increased the power of Ulugbek and the prestige of his family. As a result, Ulugbek's life and work, as the successor of Amir Temur’s legacy, played an important role in the field of science and culture. The “Mukhammad” part of the name refers to religious heritage and Muslim traditions, while “Taraghay” identifies him as a person who



occupied an important place in the family history. How he received the name “Ulugbek” is connected with his origin, family traditions and the strong personality of his time. The name “Ulugbek” is considered to be a title given to Ulugbek by Amir Temur. This name means “son-in-law” or “great” in Mongolian. Amir Temur decided to give him such a title, taking into account his military successes and glory, which were directly related to the birth of his grandson.[1; p.21] Mirzo Ulugbek initially bore the name Mukhammad Taraghay, but the title “Ulugbek” given by Amir Temur recognized him as a great person in history. This name determined his scientific heritage, as well as the significance of the activities he carried out in his time. I.A.Khamraev In his book, Mirzo calls Ulugbek by various names. He often describes Ulugbek as a “great astronomer”, “a pioneer of science”, or “a figure of culture”. He also mentions him as the “heir of the Timurid dynasty”, because he attracts great attention with his historical role and scientific achievements as the grandson of Amir Temur.

Mirzo Ulugbek began to show interest in science very early. He showed interest in his scientific research from the age of 10. During this period, he was brought up under the influence of his grandfather Amir Temur and his father Shokhrukh Mirzo. Ulugbek at that time was in contact with great scientists and thinkers and was interested in such fields as astronomy, mathematics and philosophy. It can be said that his grandfather’s direct contribution to this was significant. The reason is that Mirzo paid attention to learning from a young age. Although Mirzo Ulugbek was initially known as a great astronomer and statesman of his time, his personal life was also full of very important events.[2 p; 32] His marriage and wedding were of great importance not only in his personal life, but also in the political life of the Timurid dynasty. Ulugbek married Agabegim, the daughter of Mukhammad Sultan, in Konigil in 1404. Ulugbek’s marriage served, first of all, political purposes. The marriage was intended to strengthen the ties of the Timurid dynasty, develop alliances and cooperation. Muhammad Sultan, as the son of Amir Temur, tried to establish close ties with Ulugbek through his daughter. This marriage



was an important step in strengthening the ties of the two powerful families and ensuring the stability of the state. The wedding of Ulugbek and Agabegim was held with great pomp in its time. This ceremony was an important event not only for the two families, but also for the entire region. During the wedding ceremony, magnificent traditions and customs were manifested, the festive mood of the people was filled with dances and music. Despite the fact that Mirza was only 10 years old at that time, Ulugbek had only one goal - to make his family strong and stable, as well as to increase his authority among the people.[3 p; 20]

If we turn to history, Amir Temur set out on a campaign against China around November 27, 1404. This campaign was part of his military strategy and was aimed at the northern regions of China. Temur set out to further strengthen his power and achieve his goal of conquering new territories. During the campaign, he fought several major battles with his army, but the main goal of the campaign was to expand his influence and protect economic interests, rather than completely conquer China. Before setting off on the campaign, Great Temur divided certain territories among his grandchildren. In particular, according to historical sources, the territories of Otrok, Sairam, Yassi, Jambul, Samarkand and Bukhara were transferred to Mirzo Ulugbek. Information about Amir Temur granting Bukhara and Samarkand to Ulugbek as his heir is contained in Sharofiddin Ali Yazdi's "Zafarnoma". The work describes Temur's military strategies and the administration of the dynasty. Ulugbek participated in military campaigns in his youth and adolescence. He served in the troops of his father Shakhrukh and participated in some military campaigns. True, the period until the death of Shahrukh Mirzo can be remembered as one of the most peaceful periods of Transoxiana. In this peaceful environment, Mirzo Ulugbek had the opportunity to engage in science in depth.[4 p; 18] During this period, his opportunities for knowledge and research expanded, as a result of which he became famous for his astronomical observations and scientific works, making a great contribution to the development of culture and science. Ulugbek's activities turned Movaraunnahr into a center of science, and his legacy became important for all of



humanity. He successfully ruled the country during his reign. Ulugbek paid attention to science in state administration. He established his famous observatory in Samarkand and encouraged scientific research. As a result, Samarkand became a center of science and culture.

Ulugbek attracted many scientists, artists and poets to himself and patronized their work. He tried to ensure justice and order in his reign, which increased his reputation among the people. It should not be forgotten that Mirzo Ulugbek occupies an important place in history as a great thinker and ruler of his time. He began to show interest in science very early, from the age of 10. During this period, Ulugbek had the opportunity to study the works of such great scientists as Ahmad Ferghani, Al-Farabi, Musa Al-Khwarizmi, Al-Biruni, Ibn Sina and Omar Khayyam and use their knowledge. Through these thinkers, he became acquainted with the Greek scientists Plato, Aristotle, Hippocrates and Ptolemy and tried to apply their scientific heritage to his time. This process further expanded Ulugbek's scientific views and began to make new discoveries. In his work "Tazkirat-ush shuaro", Davlatshakh Samarkandi writes: "The learned, just, victorious and generous king Ulugbek Koragon rose to the sky in the science of the stars, and in his material science he made a hundredfold progress. "Mirzo Ulugbek played an important role in bringing the science and culture of the peoples of Central Asia to the highest level of world science. His greatest achievement was the establishment of a scientific school, the academy of that time, in Samarkand. More than 200 scientists, including such great thinkers as Kazizoda Rumi and Ghiyosiddin Jamshid Koshi, worked in this scientific school.[5 p; 43]

During the reign of Mirzo Ulugbek, Samarkand reached its peak of prosperity. By his decree, madrasahs were built in Bukhara in 1417, in Samarkand in 1420, and in Ghijuvan in 1433. Charitable institutions were also established in the city of Merv. Important constructions such as the Bibi-Khanum Mosque, the Mausoleum of Amir Temur, and the Shakhi Zinda ensemble were completed. In addition, Ulugbek also built many public buildings such as caravanserais, tims,



chorsu, and baths. These events show his attention to culture and education. Ulugbek built an observatory on the Kokhak (Choponota) hill near Samarkand. Built in 1424-1429, this observatory, according to the “Boburnoma”, was 30.4 meters high and had 3 floors. Its construction and subsequent scientific activities, together with famous scientists Ghiyosiddin Koshi, Kazizoda Rumi, and Ali Kushchi, gathered at the invitation of Ulugbek, reached new heights in astronomical science. Ulugbek’s scientific legacy serves as the basis for modern astronomy. In addition, according to Babur, the surface of the observatory was decorated with tiles and mysterious rivets. With the help of a very large instrument installed in this observatory, the Sun, Moon, planets and stars were studied with great accuracy. There was also a library in the observatory, which contained about fifteen thousand volumes of books on almost all fields of science. Thanks to the active participation of Ulugbek, this observatory became a scientific center of the highest level, equipped with excellent astronomical instruments and equipment for the conditions of that time. This scientific institution served as an important platform not only for astronomy, but also for other scientific research.[6 p; 33] The observatory, which was unparalleled in terms of its equipment in the Middle Ages, was equipped with more than a dozen different astronomical devices and instruments. One of the most important of them is a quadrant (close to a sextant) device consisting of a double arc with a radius of 40.2 meters. The southern part is a quadrant located underground, and the northern one is located 30 meters above ground level. On the circumference of the instrument, one degree of arc corresponds to 701.85 mm and one minute of arc corresponds to 11.53 mm. This instrument made it possible to measure the main constants of astronomy - the angle between the equator and the ecliptic, determine the annual precession constant, the duration of the tropical year, and other fundamental astronomical constants. The observatory contained small-sized instruments, including an armillary sphere, measuring instruments, triangulations, sun and star clocks, astrolabes, and others. With the help of these scientific instruments, the Sun, Moon, planets, and individual stars were observed.



Mirzo Ulugbek's largest astronomical work was the creation of an astronomical table called "Zij-i Ulugbek", which provided accurate information about the movements of the sun, moon and stars. He determined that the annual movement of the sun is 365 days, 5 hours, 49 minutes and 15 seconds, which is very close to modern calculations. Its construction and subsequent scientific work, together with such famous scientists as Ghiyosiddin Koshi, Kazizoda Rumi, Ali Kushchi, gathered at the invitation of Ulugbek, reached new heights in celestial science. Ulugbek's scientific legacy serves as the basis for modern astronomy. In addition, the Sun, Moon, planets and stars were studied with great accuracy using a very large instrument installed in this observatory. There was also a library inside the observatory, which contained about fifteen thousand volumes of books on almost all fields of science.[7 p 42] "Risolayi Ulugbek" is an important work by Mirzo Ulugbek dedicated to the stars, this work is considered one of the largest studies in the field of astronomy. This treatise contains the most advanced astronomical knowledge for Ulugbek's time and is aimed at studying the movement of stars. "Risolayi Ulugbek" describes in detail the location, movement of stars and the results of astronomical observations. Ulugbek used modern methods to determine the coordinates of stars through observations conducted at his observatory. The work provides information about star clusters, their relationship with planets, and astronomical processes arising from these phenomena. Thanks to Ulugbek's active participation, this observatory became a scientific center of the highest level, equipped with excellent astronomical instruments and equipment in the conditions of that time. This scientific institution served as an important platform not only for astronomy, but also for other scientific research.[8 p; 56] We can see in the pages of history that Mirzo Ulugbek made great efforts not only in astronomy, but also for the development of mathematics, as evidenced by Mirzo Ulugbek's work "Treatise on Determining the Sine of One Degree" - one of the most important mathematical studies of his time. This treatise is aimed at determining the value of the sine function relative to one degree, and occupies an important place in the fields of mathematical analysis and trigonometry.



“Tarixi Arba Ulus” (History of the Four Nations) - this work is a historical source written by Mirzo Ulugbek and scientists who lived in his time. This book is dedicated to the study of the history of the states of Central Asia, China, Iran and Turkestan. “Tarixi Arba Ulus” provides information about the history of the peoples of Central Asia, their customs, culture, economic life and political development. The book also contains many details about Amir Temur and his descendants, as well as about the relations and wars of the uluses. This book not only provides historical information, but also sheds light on the ties between peoples and cultural interaction. This work by Mirzo Ulugbek is an important tool in historical research, as well as in studying the culture and political structures of that time.

From the time the term humanity was formed to the present day, history has witnessed more conflicts and bloody wars than ever before. Unfortunately, the last years of Ulugbek Mirzo’s life were marked in history by blood. The accidental death of his father, Shahrukh Mirzo, on January 28, 1447, led to a dynastic war between the princes.[9; 11] On one side, Baysunkur’s son Olovuddavla, and on the other, Ulugbek Mirzo, are fighting for the throne inherited from their father and want to make Movaraunnahr flourish like during the time of their grandfather. According to the historian Nizomiddin Gulbaev, in this process, Mirzo’s eldest son Abdullatif and his army are captured by Olovuddavla, and in order to save his son, Ulugbek agrees to make peace and give half of the country to Olovuddavla. Considering the power in the hands of Mirzo Ulugbek, Mirzo could easily pacify the rebels, but he did not do so. However, out of curiosity and in order to take revenge, Abdullatif leads an army to Balkh, that is, to the lands under the control of Olovuddavla, and the battle ends with the defeat of Olovuddavla. Although Abdullatif showed great courage during the campaigns, all the praise and awards are directed to Mirzo Ulugbek’s younger son Abdulaziz. According to tradition, the eldest son is considered the heir to the throne, but the humiliation shown to him affects Abdullatif badly, and the desire for the throne takes hold of his body, as a result of which he draws a sword



against his father. The next confrontation, unfortunately, ended in the defeat of Mirzo Ulugbek.

Despite the terrible events that occurred in history, the thinker Mirzo Ulugbek managed to leave a good name for himself in history with his discoveries. That is why in 1908-1909, V.Vyatkin studied the Ulugbek observatory, which increased the interest of Samarkand scientists. In 1918, V.Bartold published the work “Ulugbek and his era”.[10 p; 9] During the Soviet era, Kori Niyoziy contributed to the promotion of Ulugbek. A. Akhmedov presented a scientific explanatory translation of Ulugbek’s “Zij” in 1994. In April 1994, the 600th anniversary of Ulugbek’s birth was celebrated, a monument was erected in Tashkent, and a memorial museum was established in Samarkand.

Conclusion: In conclusion, the article is about the life, scientific activities and historical significance of Ulugbek. Ulugbek was a great astronomer, scientist, and ruler who lived in the modern city of Samarkand, Uzbekistan, and achieved great achievements in science and culture in the 15th century. Ulugbek’s creation of an astronomical observatory, innovations in observing celestial bodies, and his unique approach to creating astronomical tables are noted. He is also known for his interest in mathematics. Ulugbek’s scientific legacy is important not only for his time, but also for future generations. The article also discusses his role as a statesman and his contribution to the development of culture. Ulugbek paid great attention to the development of science and art during his time, which further strengthens his place in history. In general, the article about Mirzo Ulugbek shows the versatility of his life and work, and also highlights his importance in the history of science and culture.

REFERENCES

- 1.Bartold V.V. **Ulug‘bek va uning davri.** — Toshkent: Fan, 1994.
- 2.Qori-Niyoziy T.N. **Mirzo Ulug‘bek.** — Toshkent: O‘zbekiston Fanlar akademiyasi nashriyoti, 1964.
- 3.Ahmedov A. **Ulug‘bek Zij-i** (ilmiy sharh va tarjima). — Toshkent: Fan, 1994.
4. Khamraev I.A. **Temuriylar davri va Mirzo Ulug‘bek.** — Toshkent: Sharq, 2001.



5. Sharofiddin Ali Yazdiy. **Zafarnoma.** — Toshkent: Fan, 1972.
6. Bobur Z.M. **Boburnoma.** — Toshkent: Yangi asr avlodi, 2008.
7. Davlatshoh Samarqandiy. **Tazkirat ush-shuaro.** — Toshkent: Fan, 1981.
8. O‘zbekiston Milliy Ensiklopediyasi. **Mirzo Ulug‘bek** maqolasi. — Toshkent, 2005.
9. Karimov I.A. **Yuksak ma’naviyat — yengilmas kuch.** — Toshkent: Ma’naviyat, 2008.
10. Mirziyoyev Sh.M. **Milliy taraqqiyot yo‘limizni qat’iyat bilan davom ettirib, yangi bosqichga ko‘taramiz.** — Toshkent: O‘zbekiston, 2017.