



IJIRCCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 10, Issue 5, May 2022

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.165



9940 572 462



6381 907 438



ijircce@gmail.com



www.ijircce.com

Amir Temur and the Role of Achievements of Special Sciences in Construction Culture and Architecture of the Temurian Period

Soatov Ulugbek Abdukadirovich, Hakimov Orzikul Melievich

Associate Professor of the Jizzakh Polytechnic Institute, PhD, Uzbekistan

Associate Professor of the Jizzakh Polytechnic Institute, PhD, Uzbekistan

ANNOTATION

On the soil of Central Asia, the Timurid period reached the stage of maturity in science, literature and art. The power of the Timurid state was especially evident in walking and architecture. During the reign of Temur, madrasas were built in the Gori Amir complex of Sarai mulkkhanum. Mirzo Ulugbek built madrassas in Samarkand, Bukhara and Gijduvan. Advances in the exact sciences are evident in architectural monuments. Although the construction of the madrasa was planned according to a single system, each had its own appearance according to its basic forms, their relative proportions and ornaments.

The article describes the culture of construction in the time of Amir Temur and the Temurids, and mathematical calculations in architecture by scientists of the Ulugbek Academy on the basis of information in Giyosiddin Jamshid's "Calculation Key".

KEYWORDS: Timurid period, madrasa, mausoleum, mosque, observatory, architecture, secular sciences, Eastern Renaissance, computational methods, sextant, arch, mountain, small-sized instruments.

Amir Temur paid special attention to the decoration of Samarkand, the capital of the empire. The ancient and eternally young city of Samarkand is known as a legendary city in different parts of the world with its unique oriental spirit and image, rich history, unique and amazing monuments preserved here. It is no coincidence that Samarkand, whose blue domes attract millions of tourists, has become famous all over the world, along with Rome, as the "eternal city". According to the researchers, the East, especially the Central Asian region, is the source of two powerful scientific and cultural upsurges that erupted in the IX-XII and XIV-XV centuries rightly recognized by.

During the Timurid period (1370-1507), the state was ruled by the Timurids, divided into small nations. During the reign of Timur, the lands of his state were divided into four parts: Khorasan, Jurjan, Mozandaran and Seystan (central Herat) to Shah Rukh, Western Iran, Azerbaijan, Iraq and Armenia (central Tabriz) to Miranshah, Persia, ie the southern part of Iran (center Sheroz).) To Umarshaikh, Afghanistan and North India (central Ghazna, later Balkh) to Pirmuhammad. Subordinate to the central government only in the name of the nations, it was in fact an independent state of its own. The nation was a separate state apparatus, an independent army, and its subordination to the central government was limited to sending some of the taxes collected from the population to the central office of Samarkand (later Herat) and participating in military campaigns organized by the supreme ruler. The independence of the nations was further strengthened after the death of Sultan Abu Sa'id, especially in the second half of the reign of Sultan Hussein Bayqara (1470-1506). For example, in the 1470s, Movarounnahr itself was divided into three independent states (ruled by Sultan Ahmad in Samarkand and its provinces, Umarshaikh in Fergana, Gissar, Khuttalan, and Sultan Mahmud in Badakhshan), and Khorasan and Iran by Sultan Hussein Bayqara. But these lands were also distributed among his sons (Balkh was in the hands of Badiuzzaman, Marv Abulmuhsin, Nisa and Obivard Muhammad Muhsin, Astrobod Muzaffar Husayn).

Samarkand reached its peak of splendor during the reign of Temur and the Temurids, became an incomparably beautiful and powerful place in the whole East, where the best creative forces of the time gathered. The most famous architects and engineers, artists and craftsmen of Iran, Azerbaijan, Khorezm, India and other countries, conquered by Timur and the Timurids, gathered in the palace and built many magnificent buildings in collaboration with local masters. By the order of Timur, the fortress was built, which later became the city of Samarkand (inner city)

and was surrounded by an 8 m high wall. The walls of the fortress of the former city of Birun (still called "Hisor") in the 11th-12th centuries were restored. The domed market building in the city center - six main streets leading to the side - has been commissioned. In 1404, a large straight market road began to run from the Ohanin Gate to the Chorsu Gate, crossing the entire city. Construction was not completed, however, two-story shops and domed rastas were built on either side of the road. At the intersection of the road to Bukhara, Fergana, Shakhrisabz there is a central shopping center. By the 1920s, the main square of the city, Registan (Registan ensemble), was formed here. In the first years of Timur's reign, the mausoleums of Turkan aka and Amirzoda were built in the Shahi Zinda ensemble, in 1385 the mausoleum of Shirin beka oka, then Burundiq mausoleum, Ruhobod mausoleum in the complex of Amir Timur mausoleum, Bibikhanim mosque on the eastern border of the city and other large and magnificent buildings.

In the 15th century, a number of buildings were erected outside the city. The Shahi Zinda ensemble was reformed. In 1424, the Ulugbek Observatory was built on a hill near the Obirohat canal. The medieval mosque west of the Prince's Gate was rebuilt in the 15th century. The main buildings were erected in Hissar and Timur Fortress. Inside the fortress, a 4-storey Blue Palace and the Boston Palace in Charbagh were built, which housed government offices, weapons workshops, treasury, mint, and prison. The medieval mosque west of the Prince's Gate was rebuilt in the 15th century. The main buildings were erected in Hissar and Timur Fortress. Inside the fortress, a 4-storey Blue Palace and the Boston Palace in Charbagh were built, which housed government offices, weapons workshops, treasury, mint, and prison. The famous Bibikhanim mosque (R.Muk-minova's article "Cities and times. Science and life" № 8, p. 29, 1974, the above term "mosque" is called "mosque") is one of the buildings. This mosque was built by the most famous architects of Samarkand and Khorezm, as well as Azerbaijan and Iran.

Sources about the Bibi Khanum Mosque say: "Its dome would be the only one without the dome of the sky, and the arch would be the only one without the Milky Way."

Ulugbek was a statesman who developed the state on a scientific basis after Timur's death (1405).

Ulugbek (pseudonym, real name Muhammad Taragay) - a great Uzbek astronomer and mathematician, statesman. Timur's grandson Ulugbek is one of the scientists who brought the science and culture of the peoples of Central Asia to the forefront of world science in the Middle Ages.

On March 22, 1394, Mirzo Ulugbek, an encyclopedic scholar, one of the ten greatest scholars in the history of science, a ruler who ruled for forty years, was born. Sahibkiran treated this grandson in a special way and left the upbringing of the baby at the disposal of Princess Saroymulik, who held a high position in the palace. Unique books sent by his grandfather to Ulugbek in the capital Samarkand were specially selected and became one of the richest libraries. After the prince regained consciousness, the holy shrines and blessed monuments of the country were shown one by one. A visit to the existing observatories at that time must have made a special impression on Ulugbek, who as an adult focused on celestial science. At the age of 5-6, Amir Timur, his grandfather with a diamond talent and activity, traveled to the homeland of the most ancient written monuments such as "Mahobhorat" and "Ramayana", to the fairy-tale land of India, where elephants and monkeys roam the forests.

It is worth noting that Mirzo Ulugbek is the grandson of Sahibkiran Amir Timur, who laid the foundation of the so-called Second Renaissance civilization, which is more popular today.

Samarkand flourished in Movarounnahr during the reign of Ulugbek (1409-1449); handicrafts, architecture and literature flourished, science flourished, and trade flourished. By the order of Ulugbek madrasas were built in Bukhara (1417), Samarkand (1420), Gijduvan (1432-1433) and charitable institutions in Merv. Not only religious sciences but also secular sciences were taught in madrasas. The construction of Bibikhanim Mosque, Amir Timur Mausoleum, Shahi Zinda ensemble has been completed. He also built many public buildings (caravanserai, tim, chorsu, baths, etc.).

In particular, the Ulugbek Observatory (Figure 1) is one of the rare examples of 15th-century architecture in Samarkand. The building was built by the order of Ulugbek in 1428-1429 (R. Mukminova says "Observatory was built in the 20s of the XV century (1420)") on the hill Kokhak (Choponota), on the bank of the Obirahmat stream. The observatory is a huge cylindrical three-storey building with a height of 30.4 m. Its main part was a giant sextant (square according to some sources) with a radius of 40.2 m. The southern part of the sextant is underground, the rest is about 30 m above ground level on the north side. One degree arc in the tool circle corresponds to 701.85 mm and one minute arc to 11.53 mm. The observatory was also unique in terms of equipment in the Middle Ages. The instrument allowed measuring the basic constants of astronomy — the angle between the equator and the ecliptic — to determine the

annual process constant, the duration of the tropical year, and other fundamental astronomical constants.

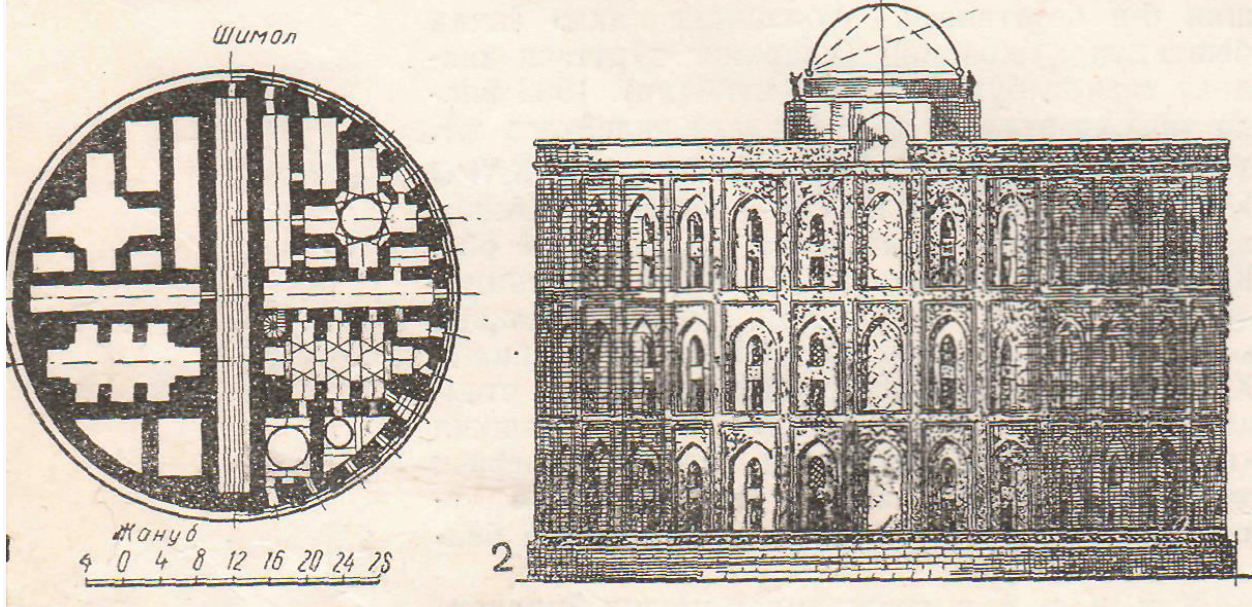


Figure 1

The planets, the movement of the moon were observed. The observatory had small-sized instruments: an armial sphere, measuring instruments consisting of 2, 4, and 7 rings, a trick, a sun and star clock, an astrolabe, and more. The work "Ziji Koragoniy", which is important in Eastern astronomy, was created here. Well-known scientists of the time - astronomers, mathematicians, architects (for example, Salohiddin Musa Muhammad Qazizoda al-Rumi, Giyosiddin Jamshid, Ali Kushchi and others) were involved in the construction.

In construction (architecture) arches, arches, ridges are often used (Figure. 2, a, b, c, g).

Arc, arch, arch (lat. Arcus - arch, arch) - an arched device that is placed on the top of the window and door seats on the walls of the building or on the bridge piers. The back is made of oriented natural or artificial stones, concrete, reinforced concrete, wood and steel. The base of the arch is called the heel, and the central ponasimon stone is called the lock. The base of the arch is called the heel, and the central ponasimon stone is called the lock. According to the shape of the arches: a) single-centered arches; b) semicircular; c) high-centered ridge; g) two or more centered spears three, five, etc. centered oval, the heels are sliding arches mounted at different heights. In order to reduce internal stresses, the arch is designed with three hinges, two hinges and without hinges. A row of arches of the same size and shape that rests on columns is called an arch.

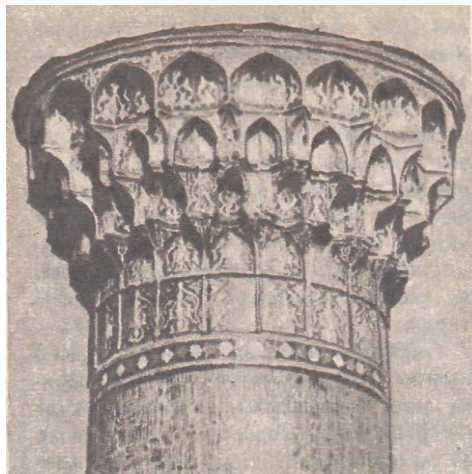


Figure 2

Giyosiddin Jamshid in his book "The Key of Accounts" talks about the methods of creating and calculating architectural forms. It also describes how to make various arches and muqarnas, and how to use calculation methods to find their surfaces and volumes. For example, the 1st facade of the arch curve formed by the method of Giyosiddin Jamshid is performed as follows: 136266 multiplied by the size (unit of measurement) between the walls of the arch, the curve of the arch is obtained. Here and in subsequent calculations, the first number on the left represents a degree, the second a minute, the third a second, and the fourth a third — sixty-one-second.

If we multiply 1353728 by the thickness of the arch, add the product to its curvature, and multiply the sum by the thickness of that arch, the surface of the facade is obtained. If the distance between the back walls is multiplied by 0.34281, the internal height of the back curve is found. When the back thickness is multiplied by 11184, its curvature thickness is obtained. When the internal height is added to this, the height of the upper part of the curve is found.

If we multiply the square of the distance between the back walls by 0.262812, the surface of the inner part of the arch is formed. Thus, the 1st facade was calculated.

Giyosiddin Jamshid, with his computational methods, found other ways (facades made in his work), domes, muqarnas.

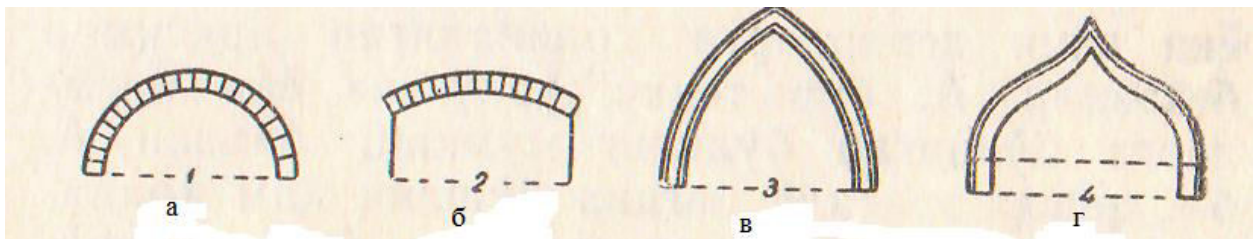


Figure 3

An arched door and window in the walls of a building is an arched structure that is placed on top of the seats, rather than on supports. The base of the arch is called the ceiling, and the upper part of the arch is called the lock.

Arch constructions can be found in such architectural monuments as Gori Mir, Bibikhanim, Ulugbek, Sherdor (Figure 3), Tillakori, Shohizinda and Ishratxona. The roof of Bibihanim Madrasa was astonishingly large.

In conclusion, it should be noted that these calculations will greatly help in the repair of ancient monuments. During the reign of Timur and the Temurids,

Samarkand, as the capital, reached the pinnacle of splendor in construction, and Samarkand became an incomparably beautiful and powerful place in the East. It is worth noting that he paid attention to the creation.

In conclusion, it should be noted that these calculations will greatly help in the repair of ancient monuments. During the reign of Timur and the Temurids, Samarkand, as the capital, reached the pinnacle of splendor in construction, and Samarkand became an incomparably beautiful and powerful place in the East. It is worth noting that he paid attention to the creation.

In the vocational education of young people, the development of our historical past, science and culture, in particular, how and in what order such luxury buildings were built in the past, who were the masters, helps them to better understand the importance of geometry and mathematics in construction.

REFERENCES

1. I.A. Karimov, Speech at the opening ceremony of the international conference "Historical heritage of medieval Eastern scholars and thinkers, its role and significance in modern civilization." People's Word newspaper,
2. Roofs of the Uzbek Soviet encyclopedia with the corresponding capital letters (A, T, U, etc.).
3. R.Muqminova. Cities and times. "Science and Life" № 8 1974 pages 27-31.
4. A.Kamolov. Science hidden in monuments. "Science and Life" № 3. 1970, pp. 20-22.
5. Q. Mahmudov. The history of our arch state. "Science and Life" № 8 1978, pages 14-15.
6. A.Axmedov. Voltaire and Ulugbek. "Science and Life" № 6, 1989, pp. 28-29.
7. T.N.Qori Niyazi. Monuments of our culture. Science and Life № 11, 1971.
8. B. Akhmedov. Lessons from history. T., The Teacher, 1944, p.
9. I.M. Muminov. History of Samarkand. I-tom. T. ; "Science," 1997, p.243.



INNO  **SPACE**
SJIF Scientific Journal Impact Factor
Impact Factor: 8.165

doi[®]
cross **ref**

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

 **9940 572 462**  **6381 907 438**  **ijircce@gmail.com**



www.ijircce.com

Scan to save the contact details