

SOME ASPECTS OF GEOGRAPHICAL HERITAGE ALI-KUSHCHI

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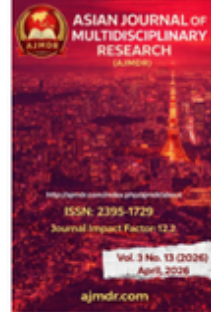
Abstract. The article reveals some aspects of the heritage of Ali Qushchi as a great geographer who contributed significantly to the development of geographical science during the Timurid era. It presents parallels between the scholar's main scientific views and his geographical legacy reflected in his works on mathematics, astronomy, and general knowledge about the Earth. The article also highlights the importance of his scientific heritage in the formation of modern geographical knowledge in Central Asia, particularly in Uzbekistan.

Key words: Central Asia, Uzbekistan, history, heritage, Timurids, geography, mathematics, astronomy, scientific views, general geography, scientific school, celestial bodies, planet, geographic coordinates, cartography.

Studying the scientific heritage of our ancestors in various scientific fields, including geography, is becoming an important task of the modern educational system. By studying the vital activity and scientific works of scientists from the East, including our ancestors such as Ali Kushchi, they help educate the younger generation and receive the right scientifically proven education.

Ali Kushchi (full name — Alauddin Ali ibn Muhammad al-Kushchi) was an outstanding scientist of the 15th century, astronomer, mathematician and thinker of the Timurid era. He is one of the largest representatives of the Samarkand astronomical scientific school of Mirzo Ulugbek (1).

Studying the creative activity of our great ancestor Ali Kushchi, I would like to single out his works related to geography, although there is no concrete evidence that he dealt specifically with geography. Scientific treatises, which reflect the geographical ideas of Ali-Kushchi, are an integral part of his scientific heritage.



Although his main field of research was astronomy, it was through it that the scientist came to a deep understanding of the shapes, sizes, structure and dynamics of the Earth as a planetary object.

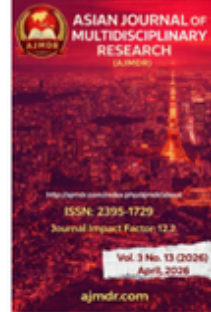
Questions of knowledge of the surrounding world, research in the field of astronomy, the definition of the scale of the Earth and the territories of the state led to the direct study of certain areas of the globe, which is the field of study of geography and its branches.

The geography of Ali Kushchi was formed naturally under the influence of the Samarkand school of Mirzo Ulugbek, one of the largest scientific centers of the XV century. It was at the Ulugbek Observatory that Ali-Kushchi gained experience in accurate measurements of celestial bodies and began to consider the Earth as a spherical body with its own coordinates and movement. Ali Kushchi has always maintained that geography and astronomy are closely interrelated. In his treatise *Risola dar ilmi Hayat*, he wrote: "Whoever wants to know heaven must measure the earth, for one reflects the other" (1).

In his opinion, to understand the structure of the world, it is necessary to study how heavenly and earthly phenomena are in their unity. This worldview anticipated the concept of the geosystem approach underlying modern physical geography. Ali-Kushchi paid attention not only to abstract ideas, but also to practical dimensions. He was engaged in determining geographical coordinates, measuring the latitude and longitude of cities, and clarifying the position of Samarkand. As a result of the observations conducted under his leadership, the latitude Samarkand was defined as 39° 37' N — a value that is amazing close to current data (39° 40' N). According to researcher A. Nosirov (1964, p. 49), this result was "one of the first scientifically documented examples of accurate geographical measurement in the East" (3).

The general geographical concepts in Ali-Kushchi's writings are reflected in various aspects. Geography, Ali-Kushchi of that time, according to his ideas, included not only a description of the lands, but also an explanation of the natural processes taking place. He considered the Earth as a living organism, where climate, water, relief and man are in one close relationship. The works of Ali Kushchi, which talk about the nature of his region, there are indications of climate differences depending on the latitude and altitude of the area.

His statements are interesting that the tilt of the Sun relative to the horizon and the length of the day affect the nature of local vegetation, temperature and precipitation of the territory. In our opinion, such statements reflect the essence and



foundations of physical geography, which as a science was formed only after several centuries.

The works where Ali-Kushchi mentioned the importance of mapping and accurate measurement of distances between several geographical points are interesting. He believed that "a map cannot be built without observation, because it should be a mirror of the earth, not its shadow." This attitude shows his desire to combine observation, theory and practice together.

A special place in his legacy is occupied by works devoted to measurements and navigation. Some researchers of the scientist's legacy note that some of his ideas were later used in the compilation of maps of Piri-Raisa (naval admiral, naval commander) and the Ottoman naval atlases of the XVI century.

Ali-Kushchi's works played a huge role in the formation and development of geographical representations of the philosophical schools of the Central Asian states of that time and the Ottoman Empire. After the collapse of the Timurid state, ideas and scientific views, traditions of the Samarkand school began

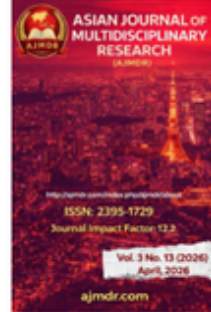
to spread, together with scientists, beyond its borders. It was Ali-Kushchi who became the scientist who transferred the ideas of the Samarkand School of astronomy and geography to other regions, for example, to Herat, Tabriz, and finally to the center of the Ottoman Empire, Istanbul.

It was thanks to his work that the scientific thought of the Samarkand Shola reached a new, higher level of intercultural exchange between East and West. During his short time in the Ottoman Empire, Ali-Kushchi did not limit himself to teaching astronomy, there he created the first foundations of geographical education. At Madras Hagia Sophia, he introduced a special course on geographical observations and measurements.

This geography program included topics about latitude and longitude, the influence of climate on nature and human life, the structure of the Earth and its place in the universe. Such an expanded systematic teaching of geography became a new phenomenon for the educational system in the Ottoman Empire.

His statements on the study of natural conditions and the population of countries are interesting, where the scientist emphasized the relationship between geographical conditions and the character of peoples.

He wrote that "a temperate climate creates tranquility and there is order, and excessive heat or cold makes a person unstable in business." Such judgments and field observations can be considered one of the first examples of geographical



determinism in Eastern science.

According to researcher S.A. Abdullaev,

Ali-Kushchi's geographical ideas influenced the works of Piri-raïs and other marine cartographers

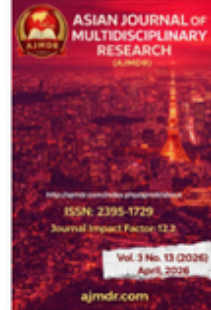
of the 16th century. Many of the principles of orientation and coordinate determination described in his manuscripts were adopted by Ottoman navigators and surveyors. Thus, the Samarkand tradition of accurate measurements migrated to the Mediterranean and Anatolia (2).

The scientist's works in the field of general scientific concepts of geography had a great influence. Ali-Kushchi also contributed to the development of ideas about shapes and sizes, about the relief of the Earth's surface. He emphasized that mountains, valleys, and rivers are formed as a result of the forces of time and water. Such ideas anticipate the concepts of geomorphology, which appeared in European science only after several centuries.

The scientist believed that the Earth was not the fixed center of the world, as European scientists and representatives of geocentrism claimed. He wrote: "If everything in the sky is moving, then the Earth can move, because it is part of this great circle of movement." This statement was an important turning point in Eastern scientific thought. It meant abandoning rigid geocentrism and approaching heliocentric concepts.

One of the most interesting and unknown works of Ali-Kushchi is his "Notes on China or 'Hitonoma'". This scientific treatise is believed to have been written by Ali Qushchi in Persian in 1438. Interestingly, this work was written after returning from China, where he was sent by the ambassador on behalf of Mirzo Ulugbek. In it, he describes the climate and nature of China, the customs and traditions of the Chinese, based on his own observations. In addition, this work contains information on mathematics and geography, as well as a world map. Interestingly, nowhere in the diplomacy of China or the countries of the Timurid era is the name of Ali-Kushchi mentioned. Therefore, we have no grounds or data that our great ancestor was in China (1).

Summarizing all that has been said and mentioned above, we can say Ali Kushchi, our great ancestor, who lived in the X century, contributed to the development of geographical science. Thanks to his work, geography in Central Asia and the Ottoman Empire transformed from a descriptive discipline into an accurate science based on observation, measurement, and analysis. Ali Kushchi's



special approach to the influence of nature on humans and

man's view of nature anticipated the ecological thinking of the 20th century.

Thus, it can be said that Ali-Kushchi has taken its firm place between the traditional geographical representations of Biruni in the East and the Copernican era in the West.

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