



## The Priceless Scientific Heritage of the Great Thinker and his Study

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### ABSTRACT

The article presents opinions on the degree of study of the rich scientific heritage of the outstanding scientist of the Middle Ages Ahmad Fergani. And also, it deals with the significance of studying them for the present.

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### Introduction

As the President of the Republic of Uzbekistan, Sh.M. Mirziyoyev, emphasized, every country in the world, every nation is powerful primarily with its intellectual potential and high spirituality. In this sense, it is a matter of pride for all of us that in the history of the Uzbek nation, scientists and scholars who are famous all over the world have grown up. Therefore, carefully preserving and studying the rich scientific and spiritual heritage left by them is one of the first tasks before us. One of our compatriots who left such an immortal legacy to the generations is Ahmad Farghani.

However, the fact that the written information about the life and work of our great compatriot Ahmad Farghani, who became the pride of our compatriots, has not reached us in full, unfortunately, does not allow us to describe in detail and fully the rich life, multifaceted researches and scientific potential of the scholar. This, in turn, means the continuation of scientific research and research in this direction. After all, Ahmad Fargani, who managed to work as the head of Ma'mun Academy - "Bait ul-Hikma", which was the first Academy of Sciences in the world history, had knowledge of astronomy, geography, mathematics and other sciences. despite the fact that he created many works, only manuscript copies of some of them have reached us. Ahmad Farghani's contemporary and mentor Muhammad Khorezmi, another encyclopedic scholar of the medieval Renaissance period, Abu Rayhan Beruni, German bibliographer and historian K. Brokelmann, who is famous for his work "History of Arabic Literature". works and several sources created in the direction of Ferghani studies of our time, it is noted that the following works related to Ahmad Ferghani's work testify to the high potential of the scholar's scientific heritage. They are carefully preserved in the libraries of countries

such as the USA, Egypt, Iraq, Tunisia, Morocco, Turkey, India, Iran, England, Germany, France, Russia, the Netherlands, and Ireland. We will briefly touch on some of these immortal works.

**"Kitab fiy-harakat as-samovia wa javami' ilm an-nujum", i.e. "The book about the complex of celestial movements and the science of stars"**. This work, which is often referred to by this name in science, is also called "Javami' ilm an-nujum wal harakat as-samaviya". This work of Ahmad Farghani was translated into Latin and published in 1669. This work is preserved in the libraries of Princeton (USA), Berlin, London, Mashhad, Tehran, Morocco, Oxford, Paris, St. Petersburg, Cairo.

There are many manuscript copies of the work, and it is called by several other names in Eastern written sources. For example, "Kitab fiy usul ilm an-nujum" ("The book of fundamentals of astronomy"), "Kitab al-hay'a al-fusul as-salasin" ("The book of astronomy with thirty chapters"), "Al-Fusul madhal" fiy Majistiy wa huwa saloso'na faslan" ("Thirty chapters written in the style of introduction to Ptolemy's "Almagest" - this copy of the work is kept in Paris under number 2504.3), "Ilal al-aflok" ("The Book of Astronomy"), "Tarkib al-Aflok" ("The Structure of the Planets"), "Al-Majisti" ("Almagest") - about Claudius Ptolemy's famous work on astronomy, which was also called "Ilm al-hay'a" ("Astronomy").

It was translated into Latin by Gerard Cremon in 1175. It was published in different European countries in 1193, 1533, 1537, 1590, 1910. A small part was published in Russian in 1960. A complete Russian translation was made by B.A. Rosenfeld, I.G. Dobrovolsky and N.D. Sergeeva, but it has not yet been published.

1175 yilda Xerard Kremon tomonidan lotin tiliga o'girilgan. Yevropaning turli mamlakatlarida 1193, 1533, 1537, 1590, 1910 yillarda chop etilgan. Kichik bir parchasi 1960 yilda rus tilida e'lon kilingan. Ruscha to'la tarjimasini B.A.Rozenfeld, I.G.Dobrovolskiy va N.D.Sergeevalar tomonidan amalga oshirilgan, biroq hamon nashr etilmagan.

**"Kitab al-kamil fiy san'a al-usturlab", i.e. "The Perfect Book on Making Astrolab"**. The work is also known as Kitab al-kamil al-Farghani ("The Perfect Book of Al-Farghani"), and three manuscript copies are currently kept in the Berlin Library. The catalog of Arabic manuscripts published by W. Alvord in 1893 in Berlin and kept in the royal library of this city provides complete information about them.

The first manuscript copy of this work is entitled "Al-Farghani's Perfect Book on Astrolaby", written during the Caliph Ma'mun's reign around 200/815, and according to W. Alvord, it is still a special work by no one. The instrument "astrolabe", which has not been written in detail, and the issues related to this instrument are covered in seven chapters. This copy of the work was copied around 900/1494 by an unknown scribe.

The second copy of this work is named "Ahmad ibn Muhammad ibn Kasir al-Farghani's book on the art of astrolabe" and is slightly different from the first copy above. Copied by Ali al-Maliki. The third copy of the work is called "A book about the art of astrolabe and its evidence". In this third manuscript, tables precede chapter V, and chapters V-VII follow the tables. This copy was copied by Ali ibn Hamid ibn Abu Bakr al-Buwayti in 783/1381.

**"Kitab fi san'at il-usturlab", i.e. "Book about the art of astrology"**. A copy of this work is kept in Paris with the number 1546.5.

**"Risola fiy ma'rifat il-avqot allatiy yakun ul-kamar fiyxo favq al-arz va tahtho", i.e. "Treatise about studying the times of the moon when it is above or below the Earth"**. A copy of the work is kept today in the Cairo city library.

**"Hisab ul-aqalim as-sab'a", i.e. "Calculation of seven climates"**. This work is a guide dedicated to the study of our motherland and is kept in Gotha, Germany. In this work, Ahmad Farghani examines the seven basic climates common in the peoples of the East and explains their measurement in a scientific way. Information about the cities of Fergana, Khojand, Samarkand, Marv belonging to the fourth climate is written in this source.

**"Kitab amal ar-ruhomot", i.e. "A guide to goodness" or "A book about the role of marble in astronomical instruments"**. The manuscripts of this book by Ahmad Farghani, which has two different names, are currently kept in the libraries of Aleppo (Syria) and Cairo (Egypt). This book is mentioned in Ibn al-Kifti's Arabic work "Tarikh al-hukamo" (Egypt, 1908, p. 188).

**"Jadwal al-Farghani", i.e. "Tables of Al-Farghani"**. The manuscript of the work is kept in the library of Patna, India.

**"Ta'lil li zij al-Khwarazmi", i.e. "Establishing the theoretical views of al-Khwarazmi "Ziji".** The name of this work is mentioned in Beruni's book "Determining Chords of a Circle Using Broken Lines".

Ahmad Farghani's works are still highly appreciated by world scientists and are read with great interest. Many scientists admit that they have widely used Ferghani's works in their scientific research. For example, the Iranian geographer Abu Ali Ahmed ibn Umar ibn Rusta, who created in 903-913, relied on the works of Ahmad Farghani and Abu Mashhal al-Balkhi (died 886) when creating the book "Al-Akhlok an-nafis" ("The Exquisite Jewels"). In one of the parts of the encyclopedic work of Abu Rayhan Beruni entitled "At-Tarhim li awail sinaat at-tanjim" ("Explanation of the Art of Elementary Astrology") related to geography, there is a subsection called "About what is in certain places of climates", the information in it indicates that Beruni was aware of Ahmad Farghani's work and resigned.

Ahmad Farg'oni asarlari hozirga qadar dunyo olimlari tomonidan yuqori baholanib kelinmoqda va katta qiziqish bilan mutolaa qilinadi. Ko'pchilik olimlar o'z ilmiy izlanishlarida Farg'oni asarlaridan keng foydalanliklarini e'tirof etadilar. Jumladan, 903-913 yillari ijod etgan eronlik geograf Abu Ali Ahmad ibn Umar ibn Rusta «Al- Axlok an-nafis» («Nafis javohirlar») kitobini yaratishda Ahmad Farg'oni va Abu Mashhal al-Balxiylar (vafoti 886 yili) asarlariga suyangan Abu Rayxon Beruniyning «At-Tarxim li avoil sinoat at-tanjim» («Boshlang'ich munajjimlik san'atini tushuntirish») nomli entsiklopedik asarining geografiyaga oid qismlaridan birida «Iqlimlarning ayrim joylarida nimalar borligi haqida» degan kichik bo'lim bo'lib, undagi ma'lumotlar Beruniy Ahmad Farg'oni asaridan xabardor bo'lganidan va iste'foda etgandan dalolat beradi.

Another scholar who read and used Ahmad Farghani's works and mentioned their name in his works is Abdulwahid al-Marokashi (1185-1250), who was born in Morocco, studied in Iran, and died in Egypt. He has a famous work entitled "Al-Mujibfi talkhis akhbar al-Maghrib" ("The Miracle of the Maghreb Information") dedicated to the history of the Muwahhid dynasty that ruled in North Africa and Spain. This work was widely spread throughout Europe after it was translated into Dutch by the Dutch Arabic scholar R. Dozi (1820-1883) and into French by the French orientalist Ye. Fanyan (1846-1930). It is interesting that, at the request of his governor, Marokashi attached a photo showing the geographical representation of the property belonging to the Muwahhid dynasty to the end of the work and wrote: ordered to tell about the distances between them and its climate. This part does not belong to the topic of this work, it belongs to the series "Roads and countries". People have written many books about this: Abu Ubayda al-Bakri al-Andalusi, Ibn Fayed al-Andalusi, Ibn Khurdadbek al-Farsi, Ahmad al-Farghani and others are among them.

This example is another proof that there were not a few people who were familiar with the works of Ahmad Farghani and used them both in the East and in the West. Western scientists D. Diderot, J. Dalamber, K. Brokelman, H. Zuter also gave a very high assessment to Ahmad Fargani's scientific activity.

It can also be noted that even during the time of the former Shura, interest in Ahmad Farghani's work did not fade. In particular, I. Yu. Krachkovsky's major articles entitled "Geography u arabov do pervyx geograficheskikh proizvedeniy" ("Geography of the Arabs before the first geographical works"), "Geography grachevskoy shkoly" ("Geographers of Grachyov's school") and other major articles on the scientific basis of the scientist's work one can see serious attempts at analysis and reference of valuable information. Also, his student T. Shumovsky, Yu. Yushkevich, B. A. Rosenfeld, M. Sale, I. Dobrovolsky, N. Sergeeva wrote a number of scientific articles in this field. However, in our opinion, they cannot claim to have fully researched Ferghani's life and work.

At this point, it is worth noting that the scientists of our country have made a worthy contribution to the study of the life and scientific and creative activities of Ahmad Farghani. In the scientific works of the scientists of our republic, T. Kori-Niyazi, H. Hasanov, A. Ahmedov, M. M. Khairullaev, etc., the works of Ahmad Fargani were mentioned and it was noted that he made a great contribution to world science. A. Nosirov and H. Hikmatullaev's treatises "Ahmad Farghani" (Tashkent, "Fan", 1966), A. Qayyumov's "Ahmad al-Farghani" (Tashkent, "Cholpon" publishing house, 1998) about scientists in our country it can be said that they were the first published works.

Studying the scientist's life and work, getting spiritual nourishment from his scientific heritage, promoting the content and scientific views of his works among the general public, especially instilling them into the minds of the young generation in Ferghana region, his motherland. working scientists also consider it

their sacred duty. This includes "The Spirituality and Heritage of Ahmad Farghani" (Ferghana, 1998), "Ahmad al-Farghani his life and work" (Tashkent, "Fan" publishing house, 1998) created by a group of scientists of the Ferghana Polytechnic Institute, an experienced technical higher education institution in the Ferghana Valley can be cited as an example.

But when the time comes, it is worth noting that in this regard, Ahmad Farghani, who is famous throughout the world for his great scientific works and who started the Eastern Renaissance, neither abroad nor in our country, major research works have been carried out. There are very few serious works detailing the scientific potential of the scientist. At the moment, we do not have the manuscripts of the scientist's works, but all of them are kept on the bookshelves of different countries of the world, so it is worth noting that none of them have been fully translated into Russian or Uzbek and have not been published.

As a result of the disintegration of the former union system, our country has moved on to a new path of development. the positive attitude has changed radically. After all, as the first President of our independent country, I.Karimov, pointed out in this regard, "...the exemplary life and work of our great scholars, thinkers, great-grandfathers who lived on our land, unparalleled scientific and creative discoveries continue to amaze the people of the world today. It should be noted with pride".

In particular, it is the time to go to foreign countries, study the scientist's rich heritage, take photocopies of it, and carry out activities related to translation into Uzbek language. The scientific and spiritual legacy of Ahmad Farghani, who grew up in our land, which claims to be the cradle of world civilization, should be extensively researched. However, such auspicious efforts serve to provide our people with complete scientific information about this great child, and also to cheer the spirit of scholars.

In 1997, on the initiative of the first President of independent Uzbekistan, I.A. Karimov, a special decision of the Government of the Republic of Uzbekistan was announced to celebrate the 1200th anniversary of Ahmad Fargani. This decision gained special importance in the study of the scientific and cultural heritage of the great scholar.

In October 1998, in cooperation with the National Center for UNESCO Affairs, a number of events were held in our country in cooperation with the National Center for the Affairs of UNESCO, as part of the activities specified in the decision, in connection with the proper celebration of Ahmad Farghani's jubilee, including an international conference on the topic "The role of Ahmad al-Farghani's scientific heritage in the development of world science". a scientific-theoretical conference and festive celebrations were held. Ahmed Ferghani Park was built in the city of Ferghana, which is the center of the Ferghana region, the homeland of the scientist. A beautiful statue of our grandfather, who studied the secrets of the catastrophe and passed on his scientific information to the generations, was installed at the high point of the garden. Today, this place serves as a holy place of pilgrimage for Ferghana residents and guests to commemorate the immortal soul of our great grandfather.

The large celebration of the 1200th anniversary of the birth of our great compatriot Ahmad Fargani in our country and in the whole world by the initiative of the UNESCO International Organization and the decision of the government of our republic indicates that the ideas and advanced views of the great scientist are alive and imbued with the spirit of humanitarianism.

The first President of our Republic, I.A. Karimov, visited to participate in the celebrations of the birthday of our compatriot, and gave a speech at the ceremony dedicated to the opening of the statue of Ahmad Fargani" [1; 188-192].

**Firstly**, science played a key role in Ahmad Farghani's scientific potential and spiritual maturity. Alloma's historical merit is that he harmoniously conducted experiments with science in the conditions of the Middle Ages, when the conditions and opportunities for serious study of science were not so extensive, and for this he had great strength and desire. - he was able to find such inclinations as desire, striving towards a goal, not being afraid of difficulties and obstacles, and being able to devote himself to the path of knowledge. He carefully studied and creatively analyzed the theories created by the ancient Greek astronomers, identified the mistakes and shortcomings in them, tested them again in his own experiments, and made more accurate calculations. In the end, he created scientific innovations capable of invaluable service for the further development of science and brought the development of the science of astronomy, which is the science of catastrophe, to a new stage, and at the same time laid the foundation for new directions.



**Secondly**, in the research of Ahmad Farghani's life and work, combined with the fact that he is a deep scholar of concrete and secular sciences, possessor of an encyclopedic worldview, and a truly Muslim brother, a person with high faith in the religion and values of Islam. should be studied. Otherwise, it will not be possible to create a full-fledged historical portrait of our great compatriot, and the danger of a one-sided approach, as it was during the former union system, will remain. In other words, today before the scientific community of our country, in the person of Ahmed Fergani, a deep connoisseur of the culture and science of the ancient world, who was able to arouse great positive thoughts and imagination in the East and West, who laid the foundation for the Eastern Renaissance and laid the ground for the European Renaissance there is a task to create the image of a wise man. This is done by the President of our country Sh.M. Mirziyoev in order to further accelerate the development of independent Uzbekistan, to face the world and take its rightful place in the world community, to acquaint the whole world with the rich science and spiritual heritage of our country. It is consistent with the creative efforts of the state and society management.

**Thirdly**, in the course of a wide study of the life and scientific and creative activities of Ahmad Farghani, a scientist who has a deep knowledge of the past and history of his country and homeland, who made a worthy contribution to its development and historical progress, in educating the growing young generation. He embodies the qualities of national pride and pride derived from the rich heritage of the scholars by carefully mastering it, he has a deep understanding of his national identity, he is loyal to the blessings of independence, he is committed to the future and potential of our country's development. We need to mentally feel that there is an important goal and goal of raising a generation that is not indifferent.

## Conclusion

Therefore, the study of the scientific and spiritual heritage of Ahmad Farghani should not be considered as a seasonal work. In the development and implementation of activities in this regard, it is necessary to unite experts in disciplines such as astronomy, astrophysics, hydraulics, mechanics, geodesy, geography, mathematics, history, philosophy, and organize joint scientific research. In our opinion, it is appropriate to generalize, explain and interpret the obtained results and conclusions by philosophers and scientists.

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