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SCIENTIFIC EPISTEMOLOGICAL ROOTS OF CHAGMIN'S NATURAL AND SOCIO-PHILOSOPHICAL VIEWS

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ABSTRACT

This article discusses the natural-scientific and social-philosophical heritage of Mahmud ibn Muhammad Umar al-Chagmini, Abu Raihan al-beruni and Abu Abd Allah Muhammad ibn Jabir al-Battani who played significant role in the devolepment of natural-scientific, philosophical sciences in medieval Eastern philosophiy.

KEYWORDS: *Islam, Albategnius, Universe, celestial body, trigonometry, Mamuna Academy, "Canon Masuda", "Mulahhas fi-l hay'a" .*

INTRODUCTION

The contribution of the Movarounnahr scholars who lived and worked before him in the formation of Chagmini's scientific and philosophical views is enormous.

It is known that in the X-XI centuries in our country there were scientists who made a great contribution to world science with their scientific views and great discoveries.

One of them is the great thinker and encyclopedic scholar Abu Rayhan Beruni (973-1047), who lived and worked in Khorezm, where Chagmini played an important role in his development as a great scientist. As mentioned above, Beruni was engaged in all the sciences of his time and wrote many works in the natural sciences - astronomy, mathematics, as well as geology, social sciences and humanities.

If we look at history, in the late eighth and early ninth centuries, natural knowledge developed rapidly in the Middle East and Central Asia.

The great scholars of their time gathered at the palace of the Caliph al-Ma'mun in Baghdad. Among them was the great Central Asian mathematician and astronomer, the creator of modern algebra, Abu Abdullah Muhammad Musa al-Khwarizmi (780-850).

Since the time of Caliph Harun al-Rashid (caliphate 786-809), many scholarly and philosophical books have been collected in Baghdad.

Caliph al-Ma'mun (813-833), the son of Caliph Harun al-Rashid, established the House of Translators in Baghdad, where the works of Greek philosophers and scholars were studied and translated into Arabic. In the early ninth century, the first observatories of the East were built in Baghdad and Damascus, where Abbas ibn Said Jawhari, Said ibn Ali and other astronomers worked. The first Arabic astronomical tables were compiled in these observatories, and practical

work was carried out in the field of observing the universe and measuring the degree of the Earth's meridian.

Another scholar who made a great contribution to Chagmini's philosophical views was the great astronomer of the late ninth century, al-Battani (Albatagenius) (850-929), who devoted his entire life to observing the universe, compiling an astronomical catalog (zij); improved trigonometric methods, introduced the concept of sine. An important formula of spherical trigonometry is named after this scientist. Al-Battani studied the eccentricity of the solar orbit with great precision and determined the age-related change in the length of the solar prise.

At the beginning of the second half of the tenth century, the well-known astronomers of the Middle East, al-Kuhi and al-Sufi, created a catalog of stars using independent determination of the apparent brightness of stars. Much of the work of modern astronomers has been devoted to the study of this subject.

The works of Al-Farghani (IX century), Abul-Wafo Muhammad al-Bozjani (940-988) describe the Moon and other planets, the angular diameters of the Sun and Moon, the development of flat and spherical trigonometry, and so on. Ibn Yunus (950-1009) drew up tables of the motion of the Moon, Sun and planets. This has served as a model for many centuries.

The works of Isaac al-Israil (died 932) played an important role in the development of chemistry. Also, the works of Abu Bakr al-Razi (died 923) and Ali ibn Abbas (died 996) have been important sources of medicine and natural science for centuries. In the first half of the tenth century, the great philosopher and scholar Farobi lived and worked.

The creative achievements of the above-mentioned famous scientists became the basis of Beruni's scientific work. In turn, Beruni was a great creative impetus for Chagmini. Chagmini also relied on the scientific heritage and research of thinkers and thinkers who lived and worked before him in his views on astronomy and medicine.

The capital of the Samanids, Bukhara, became a major center of feudal culture in the 10th century. Here was the famous library of the Emir of Bukhara, which is considered the largest and richest in the world. Beruni makes extensive use of the scientific results of all the peoples of his time and of the scholars of the past. In his works we find the names of many great scientists, such as Fales, Pythagoras, Galen, Hippocrates, Euclid, Ptolemy, Plato and Aristotle. Beruni did not stop at the level of scientific and philosophical thought of the ancient world, but went forward in his own way on many issues. **[1]**

One of Beruni's hallmarks is that he reads a lot and has an astonishing level of knowledge. But the cultural ground that nourished it is Khorezm. Two great Khorezmian scholars, Beruni and Muhammad ibn Musa al-Khwarizmi, who were separated by a period of almost two centuries, amaze with the similarity of their scientific interpretations. Both scientists are both astronomers and mathematicians. They both relied on a rich cultural heritage and made extensive use of Greek and Indian scientific traditions.

Mahmud ibn Muhammad al-Chaghmini also continued their scientific legacy, mainly engaged in astronomy, mathematics and medicine. And in his work the influence of Beruni, al-Khwarizmi and Ibn Sina is felt.

The importance of astronomy in agriculture, the importance of planning agricultural work in the context of irrigated agriculture - a source for the widespread development of Khorezm mathematical science. In this regard, the calendar was in the spotlight.

While the development of topography in Khorezm was closely connected with the construction of irrigation facilities there, the practical needs of agriculture and architecture led to the development of the science of geometry. The development of mathematical geography is associated with the travels of Khorezmian traders to distant lands. Indeed, astronomical orientation is necessary both at sea and on land. Such a wide range of geographical connections led to the formation of cartography and pictorial geography in Khorezm. **[2]**

At the beginning of the 11th century, the king of Khorezm Mamun II gathered around him people in various fields of science.

After the creation of "Monuments of Ancient Peoples", Beruni's scientific fame spread rapidly in the East. During this period, the so-called Ma'mun Academy was founded by the philosopher, physician, naturalist Abu Ali Ibn Sina, philosopher and historian Ibn Misqa Wayh, mathematician Abu Nasr ibn Iraq, philosopher Abu Sahl Masiha, ruler Abul Hasan Hammar and other famous figures of the Middle East. scientists were doing scientific work. Beruni became a leading member of the Mamun Academy, but, unfortunately, the academy did not last long.

As a result of the conquest of Khorezm by Sultan Mahmud Ghaznavi in 1017, he took many scholars, including Beruni, to Ghazna (now Afghanistan), the capital of his state. Ibn Sina, Abu Sahl and several other scholars did not want to obey the order of Sultan Mahmud and fled from Khorezm through the desert. Abu Sahl died in the desert, and Ibn Sina hid in Jurjan.

Beruni, with his work on astronomy, “Qanuni Mas'udi”, also had a great influence on later scholars, especially Chagmini's natural-scientific views.

Among the many scientific works created by Beruni, this work is distinguished by its great content, the collection of a wide range of information.

In creating this masterpiece, Beruni had reached the highest level in terms of the knowledge he had acquired, the life experience he had accumulated, the style he had carved, and the skill of expression.

Qanuni Masudi consists of eleven huge fragments. The scholar calls these passages articles.

Each article is like a separate large book on a particular field of science in terms of form and content.

Qanuni Masudi can be divided into two parts. The first part consists of five articles: each of them is devoted to the description and analysis of an individual and a scientific field.

The second part contains the remaining six articles. All of them belong to the field that is closest to the scientist's heart - astronomy.

The scholar and thinker al-Chaghmini, whom we are studying, is also strongly influenced by the above section of Beruni's “Qanuni Mas'udi” in his work on astronomy, “Mullahas fi-l hay”’a.

For example, Beruni's scientific theories about the structure and motion of celestial bodies, the position of the planets relative to each other, the interaction of the Sun and Moon with other planets, and his close views are reflected in Chagmini's five-chapter text found

In the first article of "Qanuni Masudi", Beruni tells about the beings in the universe and their general forms.

According to Beruni, the universe is a round body. Part of it is motionless. Those around the stationary part move in space along the "real thicket" - the "real center of the earth", and the sum of all these existing bodies is called the universe. **[3]**

Chagmini's astronomical work Malaxas fi-hay'a, quoted above, contains ideas very close to Beruni's views on the structure of the Earth above and its motion. For example, "All celestial bodies are spherical. All the shells and all the objects on the earth form a general view of the universe. The structure of the worldview consists of a concentric ring. **[4]**

Beruni and Chagmini's views on celestial bodies and the motions of the planets are very close to each other. It is clear from this that Chaghmini had learned many scientific theories from his mentor Beruni in expressing his astronomical ideas, and had expressed his independent views on some of his ideas.

Continuing the above, Beruni states that the rotating part of the sum of existing bodies is called the "upper universe", and the straight-moving part is called the "lower universe". The right move consists of four elements - earth, water, air, and fire.

Land is one of these four varieties. These four elements are placed in order in the middle of the universe. Their weight tends to the center of the universe, while the lighter tends to escape from the center.

Chagmini's views are close to Beruni's: "All bodies in nature are divided into two groups, the first of which is the four elements of nature - earth, water, air and fire. The second of these is the celestial bodies. One of the above four elements is heavy and the other is light. If we compare water with soil, the heaviest turns out to be soil. Because both soil and water are in the Earth's crust. From these four elements, the foundation of the universe was created. Therefore, the importance of these four elements is enormous. Their very existence on Earth gives us a great opportunity to study these elements. "**[4]**

Continuing his thoughts in Qanuni Masudi, Beruni says, "Wherever people stand, they see only half of the sky. It looks like an existing dome."

The situation of people on earth is not the same everywhere. Latitude and longitude are used to determine locations. Latitude is calculated from north to south, and longitude is calculated from east to west.

Ether has seven planets. Accordingly, it is divided into seven spheres. Above them are stationary stars in the eighth sphere. The spheres move east. **[5]**

The first of these spheres on the sheep side is the lunar sphere. The Moon is a round solid object, and the light falling on it from the Sun is reflected on the Moon. So it seems as if it is a source of light. After the lunar sphere comes Atorud (Mercury), then the planet Venus. The Sun stands above these two planets. The place of the sun in the sky is like the place of the king in the center

of the country. The motion and state of all the planets depend on the sun and are measured by the motion of the sun.

Earth, Mercury, and Venus are the lower planets.

Among the planets whose spheres are higher than the Sun, Mars is the closest to the Sun and Saturn the farthest. Between them is Jupiter. **[6]**

In conclusion, it should be noted that the medieval thinkers of the Near and Middle East made an invaluable contribution to the development of world science. Their scientific research and achievements became the undeniable basis for modern science.

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