

# Exploring Abu Raykhan Beruni's Scientific Paradigm and Ontological Dialectics

Ortikova Dilbar<sup>1</sup>, Masharipova Gularam<sup>1</sup>, Bahrom Orzikulov<sup>2</sup> and Farida Umarova<sup>3</sup>

<sup>1</sup>Tashkent Institute of Textile and Light Industry, Tashkent, Uzbekistan

<sup>2</sup>Tashkent Medical Academy, Tashkent, Uzbekistan

<sup>3</sup>National University of Uzbekistan, Uzbekistan

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**Abstract:** The article scientifically explores the dialectic of the natural science paradigm and the ontological views of Abu Rayhan Beruni. For Abu Rayhan Beruni, experience is one of the methods of knowing existence. The natural scientific heritage of Abu Raikhan Beruni, the problems posed by specific sciences, play an important role in creating a general picture of the world, that is, in the formation of a philosophical worldview.

## 1 INTRODUCTION

A study of the scientific aspects of the creation of the Universe, the creator and the doctrine of man, the universe, nature and social life in the scientific heritage of thinkers who have made a significant contribution to world civilization, revealing the essence of the relationship between man and nature, a relevant today justification for the place of natural scientific views in the development of social and philosophical thinking. Studying nature and its objective laws, Abu Rayhan Beruni stated that nature is constantly changing and developing, matter creates and changes the shape of things, and the soul (thought, spiritual phenomena) is an important property of the body. He writes about this: "Only experience and repeated testing can eliminate my doubt... despite the unanimous opinion of the speakers, its validity is not confirmed by experience" (Abu al-Beruni, 1963; p.44). At the same time, the scientist describes experience and experimentation as a way of understanding existence.

According to the researchers, "Beruni can with good reason be considered one of the creators of the empirical method in medieval science. He conducted a number of experiments to determine the properties and specific gravity of metals and minerals" (Khairullaev, 1988; p. 39). Experienced knowledge is interpreted by the thinker as reliable knowledge according to certain standards.

## 2 MAIN PART

Observation plays an important role in the work of Abu Rayhan Beruni. In the scientific study of nature, observation is interconnected with other forms of knowledge. In his opinion, the observer perceives the observed phenomenon in the place where it occurs (Abu al-Beruni, 1963; p.57). Consequently, observation records this or that phenomenon in its specific form (Abu al-Beruni, 1963; p.260). Old observational data can greatly distort the true characteristics of an object. Beruni notes that the experiment conducted by the researcher and its result are practically reliable. He writes: "There is no other priority program other than testing; there is no program leading to success other than testing by experience" (Abu al-Beruni, 1963; p. 340).

With the help of astronomical observations, Beruni tried to solve complex problems such as eclipses of the Moon and the Sun, their impact on life on Earth, climate, natural and artificial selection, conservation, developmental anomalies, with the help of new progressive methods and theoretical principles.

One of Beruni's contributions to improving the scientific picture of the universe and solving the most important philosophical problems associated with it is posing the question of the equality of his teachings on the movement and movement of the Earth from a geometric point of view. In his work "India," Beruni pays great attention to the theory of the Indian

scientist Oryabhata that the Earth moves, but the sky remains in its place without movement, and expresses his critical thoughts on this matter. Also, Beruni's correspondence with ibn Sina contained various socio-philosophical and natural science discussions. According to Beruni, man differs from other creatures in his mind. Beruni tries to rely on material factors and laws of nature and reflects on the important role of the geographical factor in the life of humanity and society. In his work on India, he analyzes the differences in the traditions of Hindus and Muslims and comes to the conclusion that they also depend on geographical conditions. Abu Rayhan Beruni expresses the opinion that "... people were forced to unite into society in order to protect each other, to do something necessary to provide for themselves and others" (Abu Beruni, 1968; p. 236). According to him, in addition to this, a person needs to work honestly.

Abu Rayhan Beruni is considered one of the greatest thinkers not only of Central Asia, but also of the East as a whole, in the history of world science and culture. His works "India", "Historical Monuments of Ancient Peoples", "Mineralogy" studied issues such as people's lifestyle, social life and social relations. The preface to the work "Mineralogy" contains valuable thoughts about the social status of man, the nobility, social life, duty on earth, and social justice.

Abu Rayhan Beruni is literally one of the politicians and statesmen of his time. In his work "Historical Lies of Ancient Peoples," he left necessary and interesting information about various peoples: Greeks, Persians, Malikian Christians, Jews and pagans, Christian Christians, pagan Arabs, Sabites, Turks, Muslim Arabs and other peoples.

In his work "India," he gave reliable opinions about Indian society, customs, internal structure, family relationships, year, month and historical dates, rituals, and marriage issues.

Abu Rayhan Beruni put forward and proved important scientific and philosophical ideas about nature, natural phenomena and processes endlessly occurring in it. It reveals the ontology of changes in the world, that is, the structure, specific reasons for the appearance and disappearance of disturbances, as well as natural scientific and sociological considerations.

Abu Rayhan Beruni recalls his youth in the work "Saidana" and says: "Since childhood, I have longed to learn as much as possible, depending on my age and circumstances. The following fact can be cited as proof of this: a Greek moved to the place where we live (at that time). I took all sorts of grains, seeds, fruits, etc., showed them to him, asked what these

things were called in his language, and wrote down their names" (Shamsi, 1974; p. 194-195).

The rich cultural heritage of Abu Rayhan Beruni was not limited to his scientific and cultural works; in addition, the encyclopedist was also interested in political and legal issues. One of the political ideas of Abu Rayhan Beruni is his views on the emergence of the state. In his opinion, he puts forward the idea that people are forced to come together in an organized way to fight their enemy and satisfy their basic needs. Therefore, the basic rules of people's social life should be based on principles such as mutual assistance, living peacefully with each other, and working in the name of common interests. The main task of a person is to work. Because everything is achieved through hard work. People explain the main reason for the division of people into oppressors and oppressed by property inequality, based on concepts such as rich and poor, and labor and barter contracts concluded between citizens are divided into two types: first, legal or fair contracts - in which they receive wages payment commensurate with their work. The second is illegal or unfair contracts - where deception, coercion and inequality are used, where the interests of only one party are taken into account (Masharipova, 2019; p. 171-172).

Abu Rayhan Beruni Beruni was an encyclopedist who was also interested in political and legal issues and was literally a very knowledgeable person of his time in matters of state and administration. He seeks questions about the state, the emergence of law and his duties from natural needs, like Abu Nasr Farabi. His ideas have a sense of opposition to despotism, and people unite into a state based on an agreement to establish a system of social justice, says Abu Raihan. - Although enlightened kings are glorified, in his opinion, society should not serve the king, but the king should serve society. "The essence of administration and management is to protect the rights of those who have suffered under the oppressors, to lose their own peace for the sake of the peace of others. It consists of physical exhaustion in order to protect and defend one's family, one's life and property. According to his political views, the head of state must have the ability to govern by nature. The head of state must have the natural ability to govern, be firm in his opinions and decisions, and follow the laws of the sages when solving important issues of the state. Explaining this with the example of Aristotle's advice to Alexander and the story of Alexander's adherence to it, he says: "The task of a just ruler is to establish equality and justice between the higher and lower classes, the strong and the weak" (Abu Beruni, 1968; p.73).

To do this, the head of state should follow the laws of the sages when resolving important issues of the state. In this, Abu Rayhan Beruni gives the

example of Aristotle's advice to Alexander, and Alexander followed it. According to Abu Rayhan Beruni, "the task of a just ruler is to establish equality and justice between the upper and lower classes, the strong and the weak."

Abu Rayhan Beruni, seeing that the reign has become a legacy, opposes the law of the state, which is passed on from one generation to another, and the position of a person in society is determined by the antiquity of the generation and the merits of the ancestors. On this occasion, he says: "Whoever says that he will receive a position (royal or gubernatorial) through his deceased relatives and ancestors, he himself has died, such descendants are alive." In his opinion, the leadership of the state depends on the abilities of a person; he puts forward the idea that the ability of a particular statesman to manage power does not depend on the abilities of his descendants. Nowadays, the skin color, language and appearance of people differ not only depending on the generation, but also depending on the environment, air and water in which they live. In his opinion, the existence of different states and the existence of different rulers depend on the above (Abu-p-Raihan, 1963; p.235).

В политических воззрениях Абу Райхана Беруни выдвигается идея о том, что правитель, избранный народом для управления государством, должен быть справедливым и человеколюбивым (Abu-p-Raihan, 1963; с.237). Эта мысль поясняется на примере рассказа в произведении «Минералогия»: «Там между представителями управления земли и собственниками земли они переходили друг к другу по очереди, и кому доставалась очередь, правил эти три месяца. По истечении срока он в знак благодарности раздает милостыню и возвращается к своему народу, радуясь вместе с ним, как будто освободившись от оков, и занимаясь своим делом. Это потому, что говорится, что управлять государством – это лишение удовольствия. В данном случае он имеет в виду, что сделает угнетателей в этом месте справедливыми по отношению к угнетенным. А это истязать свою жизнь с целью подготовки военного мероприятия для защиты своих подчиненных и себя» (Abu-p-Raihan, 1963; p.237).

Abu Rayhan Beruni, in his teaching on spirituality and enlightenment, says that thinking determines manners, intelligence, education, work, human life and social essence. He proved that such important factors as joint activities based on mutual assistance, socio-economic, spiritual and educational ties and relationships play a large role in the formation of society even in the Middle Ages. The emergence and development of society, the formation of the spiritual and moral image of a person are the result of the need

of people to work together, this is often mentioned in the teachings of Abu Rayhan Beruni.

The need to jointly perform certain tasks lies at the core of the existence of human activity. "The dignity and most important task of a person is to realize his own interests at an excellent level, so in this place work is valued, thanks to his work a person can achieve high positions," writes Abu Rayhan Beruni in *Geodesy*" (Bulgakov, 1966; p. 132).

### 3 RESEARCH METHODS

The study used analysis, synthesis, structural analysis, induction and deduction, and comparative methods. The observability of objects, the reproducibility of experiments and the verifiability of observations can be noted in the legacy of Abu Rayhan Beruni. These considerations suggest that experience as a method of acquiring knowledge and testing its reliability was quite widespread back in the medieval period. It is important that the idea is developed and the acquisition of reliable knowledge is associated with experience, the reliability of the knowledge is verified by experience.

### 4 APPLYING RESEARCH TO PRACTICE

According to medieval astronomers and representatives of the exact sciences, Beruni's series of astronomical discoveries surpassed those of the Greek astronomer Ptolemy. Beruni's theory of matter, units of measurement, speed, linear and angular velocity, weight, specific gravity, contacting vessels, springs, arterial wells, atmospheric pressure vacuum, convection, attraction between liquid particles, free fall of colliding bodies, simple mechanisms, experiments. and thoughts have not only a physical, universal, but also a philosophical meaning.

Labor is the basis for the spiritual and moral improvement of a person. Through work a person gets what he wants, he explains that due to the lack of work there is no joy in life. This idea becomes the main issue in the socio-political and philosophical teachings of Abu Rayhan Beruni, especially in his views on spirituality and enlightenment. In the teachings of Abu Rayhan Beruni, those associated with spiritual and educational views, morals, labor, profession, education, knowledge are analyzed and interpreted in dialectical unity. No wonder he wrote that any area of practical human activity cannot be realized without their interdependence. Honesty,

fairness, justice - these are signs of Beruni's excellent manners and high spirituality. He teaches that even at his own expense, not to turn away from the truth, to speak the truth, to approach everything fairly and impartially, he himself becomes an example of lifelong loyalty to these ideas and teachings.

The teachings of Abu Rayhan Beruni about spirituality and enlightenment, universal ideas such as science, brotherhood, culture, sincerity, justice, equality, humanity, goodness, correctness, serve as the moral, ethical, spiritual and philosophical basis for the formation of a new national education of thought.

Alloma's thoughts, on the one hand, creatively developed the advanced traditions of Central Asia, on the other hand, Beruni's maturity testifies to the breadth of the range of thought. It is noteworthy that he raised the question of the "cause of causes" of man and the emergence of human society. "The oldest and most famous of ancient stories is the beginning of humanity" (Abu Beruni, 1968; p.50). At this point we see that Beruni takes a position of rationalism regarding the emergence of an individual society. When Beruni spoke about the existence of tawafut between people, he thought only about external differences. But the internal structure and organization of people, in his opinion, are the same for everyone. He notes that there are similarities between humans and apes.

Analyzing the differences between Muslim and Indian traditions in his work "India", he put forward the idea that they depend on geographical conditions, continuing to analyze the role of the geographical factor, he believed that even the diversity of languages depends on geographical conditions. "The reason languages vary is because people divide into groups and stay away from each other."

Abu Rayhan Beruni admits that social life is built on the basis of a special "contract": "A person begins to realize his needs and the need to live together with people like him. Therefore, they begin to draw up a "contract" of mutual consent. The cohabitation of people does not lead a person to real power, to the satisfaction of his needs, for this, too, one must work." Continuing this thought, he wrote that "the dignity of man consists in the performance of his duty at an excellent level: therefore the most important duty and place of man is determined by work, and man achieves his desire through work."

At one time, Abu Rayhan Beruni founded real scientific natural science; in its various fields, he put forward ideas and scientific hypotheses that were amazing for his time, which were proven in European science several centuries later. Beruniy is one of the pioneers of precise scientific thinking, based on real experience, observations and experiments in the Middle Ages. He also worked in the field of

philology, studied the structure of Indian poetry, and translated classical Arabic poetry and examples of Iranian folklore into Arabic. Beruni believed that the development of the country is inextricably linked with the development of science [9, p. 126-138].

"Every scientist must base his reasoning on practice, work continuously in his research, be precise, look for and correct all kinds of fabrications for the sake of truth in science, and fight superficiality," he said. He fought for peoples to live as a union, and strongly condemned wars that destroy humanity, the science and culture it created. In his work "India," he wrote with regret that "there is a lot of friction and quarrels between peoples." His extensive research work in India focused on issues of friendship and strengthening mutual cooperation and cultural ties between peoples. It can be seen that Beruni paid great attention to the wide dissemination of cultural knowledge and cooperation.

Beruni places particular emphasis on emotional cognition. He writes: "When the fields of knowledge develop more and more, they will increase as the intellect of people joins them, and a sign of this is the desire of people for science, respect for it, respect for scientists." Regarding the knowledge of the unknown principles of reality, he says: "All phenomena that need to be known have a path through which knowledge can be obtained."

The encyclopedic book by Abu Rayhan Beruni entitled "Relics of Ancient Peoples" (Abu Beruni, 1968) can be considered a classic encyclopedic work devoted to the analysis and synthesis of the events of the last 5 thousand years of human history. In this book, the great thinker spoke about the methods that he used in the process of writing the work, and wrote about his scientific and philosophical research: "During the writing of this work, I became convinced that it is impossible to obtain real information by citing evidence from intellectual things and comparing them with observable things. This is determined by following only the "people of the book" and various religious figures, people of various professions and beliefs who follow these (beliefs) and their concepts are always justified. Then this is known by comparing the words and the beliefs that they bring for proof" (Abu Beruni, 1968; p. 406).

The ways and methods of understanding the world are developed in philosophy and this is expressed in methodology (the study of methods). The social philosophy of Abu Rayhan Beruni is based on a discussion about the ways and methods of studying man and society (Karimov et al., 2008; p.5). Abu Rayhan Beruni notes that the landscape of the world was formed as a result of an evolutionary process. "This supports the idea that the source governing the Universe is a conflict consisting of "structure and destruction" (Abu Beruni, 1968; p. 26).



At the same time, Beruni says that the force that leads the world to social development is not conflicts and contradictions, but reconciliation and harmony at different social levels. "How can you believe in something that clearly contradicts?" (Abu Beruni, 1968; p.44), - the thinker points to the growing need to change processes free from contradictions. Throughout his entire creative activity, Alloma was interested in issues of social life, and expressed his philosophical views in the works "India" and "Relics of Ancient Peoples". Abu Rayhan Beruni developed the philosophical ideas of thinkers of Central Asia and the East. In particular, in his work "Memorials of Ancient Peoples," he tried to solve the issue of human life on a scientific basis. He showed the importance of the geographical factor in the life of society and people, its influence on social events. He attributed differences in Muslim and Hindu traditions to geographical conditions and even attributed differences between languages to geographical factors. In his opinion, the path to philosophy lies through the natural sciences, which allow us to deeply understand existence. In general, Beruni agrees with the definition of philosophy as a science that cognizes the essence of existence. He also agreed with the point of view of Abu Mashar al-Balkhi that "Nature is the strongest" (Abu Beruni, 1968; p. 99). Scientists of the East and West made a significant contribution to the creation and development of world socio-philosophical teaching. During certain periods of social development, the countries of the East occupied a leading position. Theoretically, it is wrong to one-sidedly exaggerate or underestimate the role of the peoples of Asia and Europe in the development of world philosophy. Any science is inherently universal. Every nation on earth, regardless of its size, contributes to its development.

As the spirituality of mankind grew, views on society also improved; more complex and reliable scientific and philosophical views on society arose in comparison with very simple religious and mythological views on society. Great scholars such as Farabi, Abu Rayhan Beruni and Ibn Sina made significant contributions to the development of consistent scientific and philosophical views on society. For many centuries, their progressive views played an important role in improving social relations and the formation of a perfect human personality and are still relevant today.

Abu Rayhan Beruni founded real scientific natural science in the conditions of the Middle Eastern Renaissance; he put forward scientific and hypothetical ideas that were amazing for his time in various fields of natural science, which were proven in European science several centuries later. It should be noted that Beruni's works express deep socio-scientific and philosophical considerations and

generalizations related to his natural science views. Based on the scientific and philosophical teachings of Farabi, he believes that Allah is the root cause of everything. He understands that God is recognized as the creator of all things. But Beruni gives nature the right to develop and change everything that comes from the root cause. According to his teachings, everything in nature is created on the basis of natural laws, nature has its own natural force, and under the influence of this force, processes of non-stop movement, change, growth, development, emergence, decay, and destruction occur in nature. We can conclude that Beruni was close to deism in his scientific and philosophical views. He talks about the literature of the material world (Masharipova, 2019; p. 177).

The socio-political views of Abu Rayhan Beruni are imbued with humanitarian ideas. He explains man as the most noble creature. He emphasizes that people should not live only for themselves, people should help each other. In his opinion, the differences between people exist rather externally, and they have commonality in terms of internal structure and organization.

Historiography includes the article "The Works of Abu Rayhan Beruni in Oxford," published by

A. Khabibullaev in the eighth issue of the collection, which provides information about the works of Abu Rayhan Beruni, stored in the Bodleian Library of the University of Oxford, Great Britain; Nine manuscripts of seven of his works are reported to exist, and a brief description of them is appended.

## 5 CONCLUSION

1. Abu Rayhan Beruni believes that scientific truth should be a certain criterion. He knew that the complex and difficult task of proving the unfoundedness of untrue, unexamined, heartbreaking, deafening and stunning myths and unfounded claims could be solved through experience and practice. At the same time, we have every right to say that he is a great scientist who understood the importance of logical conclusions and taught us to see the concepts of "intuitive knowledge" and "mental knowledge" together.

2. Studying the scientific heritage of Abu Rayhan Beruni makes it clear that the scientist recognizes observation as the first stage of scientific knowledge, and also raises observation to the level of conducting active experiments, which he widely used in his scientific and creative activities.

3. In his astronomical table, Beruni put forward the heliocentric hypothesis that the center of

the Universe is not the Earth, but the Sun, and that all planets, including the Earth, revolve around the Sun. Alloma's scientific conclusion was scientifically confirmed 500 years later in the heliocentric system of the great astronomer Copernicus. In a conversation with Abu Ali ibn Sina, Beruni comes to the conclusion that the planets in the Universe, including the Earth, have mutual attraction. His scientific assumption was scientifically substantiated by the law of universal gravitation, discovered by the English scientist Newton at the beginning of the 18th century. With his socio-political views, Abu Rayhan Beruni developed the advanced traditions of not only Central Asian, but also ancient Indian, Greek and Iranian thinkers, and became known to the world as a historical sociologist.

4. The philosophical views of Abu Rayhan Beruni study the national and religious views of the Central Asian region. In Beruni's philosophical views, along with religious knowledge, his views on worldly natural science were confirmed in European science.

5. Beruni emphasizes that the force that leads the world to social development is not conflicts and contradictions, but compromise and consensus at different social levels.

6. Abu Rayhan Beruni saw the development of the country and the well-being of the nation as inextricably linked with the development of science. Emphasizing the need for every scientist to be practical in his discussions, to have a clear goal in his research, to work tirelessly to find and correct errors, to fight superficiality for the sake of truth in science and to live as a union in the land of various fabrications, emphasizing the need to fight superficiality by fighting for that, in order to live as one union, the peoples are united, united, strongly condemned wars that bring destruction to humanity, called on people for peace. He also highly valued the practical application of experience and creative activity as observation in scientific knowledge.

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