ISSN: 2775-5118 VOL.3 NO.3 (2024) I.F. 9.1

THE VIEWS OF UZBEK AND FOREIGN SCIENTISTS ON THE FORMATION OF NATURAL SCIENCES

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Annotation: As we know, in modern society, the natural sciences play a fundamental and pivotal role in many aspects of our lives. Natural sciences play an important role in the modern scientific knowledge system. Their importance cannot be overstated, as they are the foundation of the productive forces that propel contemporary society's development. In the article basic theories of Uzbek and foreign sciences on the formation and development of natural sciences were analyzed.

Key words: *Ecological teaching, genetic engineering, solar thermal systems, empirical evidence, formal sciences, natural history, astronomical inventions.*

In fact, Uzbekistan is a great cradle of science and education in the world. The natural sciences of the world were first formed in us as a science, and if we look at the history of such truths, they prove it with concrete facts. Ecological teachings were first recorded in Avesto texts written before our era. Ecological education and culture were formed in the ancient Khorezm state at that time. It is noted in this valuable monument that in the pre-Christian period, our ancestors made observations in all areas, leaving many rare ideas about ecology, soil ecology, plant ecology, housing ecology and cleanliness. Today Uzbekistan is a large scientific center in Central Asia. Almost 300 scientific institutions function in the country. There are a well-developed research basis and a wide scientific fund with over 25,000 skilled scientists and researchers. The scientists of the republic carry out fundamental research in the important trends of modern science contributing greatly in such branches like microelectronics, astronomy, biophysics, genetics and geology. The accomplishments of Uzbek scientists in probability theory, hydrometeorology and the study of superconductors, medicine and agriculture are well known. During the transition period, the share of public funds allocated for the development of science make up 0.5 - 0.6% of the budget. Over 3.5 billion soums are allocated annually for research programs carried out by the State Committee on Science and Engineering. Stemming from the issues of Uzbekistan's development, the priority trends in scientific research include the utilization of genetic engineering in the production of new kinds of silkworm cocoons; the

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development of solar thermal systems; and the development of water-saving irrigation and water conservation technologies. In order to study the views of Uzbek and foreign scientists on the formation of natural sciences firstly we should clarify what is natural science and its historical development.

Natural science is one of the branches of science concerned with the description, understanding and prediction of natural phenomena, based on empirical evidence from observation and experimentation[1]. Mechanisms such as peer review and repeatability of findings are used to try to ensure the validity of scientific advances. Natural science can be divided into two main branches: life science and physical science. Life science is alternatively known as biology, and physical science is subdivided into branches: physics, chemistry, earth science, and astronomy. These branches of natural science may be further divided into more specialized branches (also known as fields). As empirical sciences, natural sciences use tools from the formal sciences, such as mathematics and logic, converting information about nature into measurements which can be explained as clear statements of the "laws of nature".[2]

Modern natural science succeeded more classical approaches to natural philosophy. Galileo, Kepler, Descartes, Bacon, and Newton debated the benefits of using approaches which were more mathematical and more experimental in a methodical way. Still, philosophical perspectives, conjectures, and presuppositions, often overlooked, remain necessary in natural science.[3] Systematic data collection, including discovery science, succeeded natural history, which emerged in the 16th century by describing and classifying plants, animals, minerals, and so on. Today, "natural history" suggests observational descriptions aimed at popular audiences.

Some scholars trace the origins of natural science as far back as pre-literate human societies, where understanding the natural world was necessary for survival. People observed and built up knowledge about the behavior of animals and the usefulness of plants as food and medicine, which was passed down from generation to generation[4]. These primitive understandings gave way to more formalized inquiry around 3500 to 3000 BC in the Mesopotamian and Ancient Egyptian cultures, which produced the first known written evidence of natural philosophy, the precursor of natural science. While the writings show an interest in astronomy, mathematics, and other aspects of the physical world, the ultimate aim of inquiry about nature's workings was in all cases religious or mythological, not scientific. Today,

ISSN: 2775-5118 VOL.3 NO.3 (2024) I.F. 9.1

natural sciences are more commonly divided into life sciences, such as botany and zoology; and physical sciences, which include physics, chemistry, astronomy, and Earth sciences.

If we go back to the history of natural sciences in Uzbekistan we will discover much useful data about the role of our ancestors in development of natural sciences. Improvements in science and culture have been ongoing in Uzbekistan since ancient times. In particular, there were commonly grown sciences like astronomy, mathematics, medicine, physics, history, reasoning, etymology, writing, and specialties like figure painting, weaving, pottery, and glass manufacturing. One of the largest scientific and social centres of the East between the ninth and tenth centuries was Central Asia, where the first scientific expedition groups as well as foundations and scientific networks resembling modern institutes were established. The advancement of the natural and exact sciences was rapid during the ninth and fifteenth centuries. In some areas, the level of exploration sought after by Muhammad al-Khwarizmi, Ahmad al-Fergani, Abu Nasr Farabi, Abu Rayhan Beruni, Mahmud of Kashgar, Abu Ali Ibn Sina (Avicenna), Nasriddin Tusi, Qazi-zadeh Rumi, Jamshid Kashi, Ulughbeg, Ali Kushchi, and other researchers from the East was significantly higher than the results of work directed in[5].

Ulugh Beg was the very first astronomer and a supporter of science. Timurid astronomer Ulugh Beg produced some of his time's outstanding astronomical senses. In Samarkand, he established a madrasa, which had a rigid daily programme. In contrast to other madrasas, science and astronomy were among the primary disciplines taught here. The building is genuinely present at Registan Square. On a rocky ridge outside of Samarkand, he built his own observatory

Jamshid – al – Kashi (Born: about 1380 Died: 1436 in Samarkand, now Uzbekistan). After the death of Ulugh Beg, Timur, who had proclaimed himself emperor and restorer of the Mongol state at Samarkand in 1370, was razing vast areas of Muslim territory as al-Kashi was growing up. He was his student. As we most likely know from his Khaqani zij, the main event in al-life Kashi's was his observation of a lunar eclipse in Kashan. Sullam Al-Sama (The Stairway of Heaven, on Resolution of Difficulties Met by Predecessors in the Determination of Distances and Sizes), his composition, was completed (of the magnificent bodies). Years after the occurrence, as shown by the replica in the British exhibition hall, his Mukhtasar dar ilm-I-hayat (Compendium of the Science of Astronomy) was dedicated to Sultan Iskander. Al-Kashi was working as a doctor to increase his income until Ulugh Beg gave him a job that would last forever.

Apart from the astronomical inventions done by Ulugh Beg and Jamshid – al – Kashi, Ibn e Sina became the very first person who studied medicine in such depth. Ibn Sina, regarded as

ISSN: 2775-5118 VOL.3 NO.3 (2024) I.F. 9.1

the Prince of Doctors and the Aristotle of Muslims, was a scholar, logician, specialist, and author. He was designated AL Shaikh ALRais, the third expert educator after Aristotle and Al-Farabi. He continued with his studies, focusing on phonetics, logic, reasoning, theory, and medicine. He was well-known as an expert at the age of 17, and he then started to visit his area and order books. By the time he was 20, he was a well-known expert in math, theory, space science, and medicine. Ibn Sina had a wide range of scholarly and artistic activities. He performed astronomical investigations while he was in Isfahan and afterwards in Hamdan. In the realm of space research, he was able to see Planet Venus pass through the plate of the solar circle outwards, which was later confirmed by the English cosmologist "Jeremiah Rocks" in the seventeenth century. Ibn Sina also worked in astronomy, advanced it, and developed machinery for glitches that had never occurred. Ibn Sina made numerous noteworthy contributions to science. It is quite valuable for topography, especially for the metal and rock and mountain structures. Ibn Sina had a particular interest in phytology and conducted in-depth scientific research on the topic of healing plants. He conducted careful, scientific inspections of plant roots, leaves, and blooms and carefully, scientifically illustrated them. In his own groupings of six arrangements of single and complex medications, he specifically referred to the outstanding book Canon in Medicine, which is highly regarded by academics in medicine and pharmacy.

As a conclusion we should highlighted that nowadays, scientists in Uzbekistan are effectively examining the scientific legacy left by earlier scientists, advancing science with their fresh discoveries, and making a crucial commitment to global science. The Republic of Uzbekistan is aggressively searching the globe for academic artefacts related to the nation's experiences. This aggressive arrangement includes numerous international researchers. The area that is now known as Uzbekistan has seen several heroic surges of traders and travellers over a period of more than 3,000 years, including Persians, Genghis Khan's Mongols, Turks, Alexander the Great's Macedonians, Muslim Arabs, and eventually Russians. Apart from these emperors, if we talk about the scientists and their legacies, Uzbekistan has seen many great scientists as we have discussed above. All had a significant impact in some way, some in design and others in writing, science, and creative expression. We can continue to follow the researchers' customs. Currently, their contributions have made a significant impact in a wide range of subjects, such as Ibn e Sina's contributions to medicine, cosmology, and many sciences, Ulugh Beg's contributions to astronomy and Jamshid al Kashi's contributions to math specifically. The youth should be taught about modernity in Islamic history using the theories and research of these scholars as examples.

ISSN: 2775-5118 VOL.3 NO.3 (2024) I.F. 9.1

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