Journal of Social and Theological Studies
https://mijournals.com/index.php/JSTS

THE ROLE OF WESTERN SCHOLARS IN STUDYING THE LIFE AND SCIENTIFIC HERITAGE OF CENTRAL ASIAN SCHOLARS AND THINKERS

https://doi.org/10.57033/mijournals-2026-1-0034

Masrur RAHIMJONOV
Associate Professor, Department of Oriental Philology
Alfraganus University Doctor of Philosophy (PhD) in Philology
*E-mail:*masrurrahimjonov@gmail.com

Received: 12-12-2025
Accepted: 19-12.2025
Published: 11.01.2026

Abstract. *This article analyzes the period of scientific and cultural renaissance that took place in Central Asia between the 9th and 12th centuries. The paper highlights, in detail, the scientific heritage and works of great encyclopedic scholars who emerged from this region, such as Abu Rayhan al-Biruni, Abu Nasr al-Farabi, Muhammad al-Khwarizmi, Ahmad al-Farghani, Ibn Sina (Avicenna), Imam al-Bukhari, and Mahmud al-Zamakhshari. In addition, the article examines the contribution of Muslim scholars to medieval science and culture, as well as the scientific environment and cultural conditions of Central Asia. The study draws upon the scholarly works of foreign researchers such as G. E. Grunebaum, A. Metz, G. Sarton, M. Meyerhof, S. H. Nasr, and D. Hill, as well as Russian scholars including V. V. Bartold and O. G. Bolshakov.*

Keywords:*Central Asia, 9th–12th centuries, scientific renaissance, Muslim scholars, al-Biruni, al-Farabi, al-Khwarizmi, al-Farghani, Ibn Sina, Imam al-Bukhari, Mahmud al-Zamakhshari, scientific heritage, Muslim culture, medieval science.*

INTRODUCTION

Since ancient times, the territory of Central Asia has been one of the major centers of world culture and science. From this region emerged scholars and thinkers renowned not only in our homeland but throughout the Muslim world and globally. Such a significant cultural and scientific rise did not occur by chance; rather, it was ensured by a scientific, cultural, and intellectual environment formed over centuries. The intellectual output of Central Asian scholars made invaluable contributions to the development of world science not only in their own era but also in subsequent centuries.

MAIN PART

From the earliest times, Central Asia has been regarded as one of the cradles of world civilization. This region produced scholars and intellectuals who made enduring contributions to global science and elevated the prestige of their homeland.

Indeed, such a profound cultural rise in Central Asia could not have emerged spontaneously or without cause. Rather, due to the existence of favorable conditions and a tradition of scientific development formed over centuries, the aforementioned scholars, along with their teachers and students, were able to emerge.

Naturally, such an immense scientific potential in Central Asia could not have arisen without a solid foundation. It was precisely the long-established tradition of scientific progress and the presence of appropriate conditions in this land that enabled the emergence of the above-mentioned scholars, as well as their mentors and disciples (Mukhamedov & Turambetov, 2023:322–325).

"Any changes or innovations in the development of society especially processes and discoveries that give a powerful impetus to the progress of humanity do not occur by themselves. First and foremost, there must be long-standing traditions, appropriate conditions, a school of thought, and a rich cultural and spiritual environment. Within the nature, bloodline, and heritage of a nation, the ideology and intrinsic drive toward goodness and enlightenment must prevail" (Abduhalimov, 2000:25–30).

The lives and intellectual legacies of Eastern scholars have consistently attracted the attention of researchers. For this reason, both Western and Eastern specialists have carried out numerous studies addressing issues related to the lives and scholarly activities of these eminent figures.

Below, we will briefly review the contributions of several Western scholars and researchers who have been engaged in the study of the history, science, and culture of Eastern peoples.

The term "Muslim Renaissance" was first introduced into scholarly discourse by the renowned Swiss orientalist Adam Metz in his work bearing the same title[1] This

[1] Adam Metz (1869–1917) was a renowned Swiss orientalist and specialist in the Arabic language, and served as a professor in the Department of Oriental Languages at the University of Basel in Switzerland. He was the author of The Muslim Renaissance, a work to which he devoted his entire life but did not manage to complete. The book was published posthumously in 1966.

work is devoted to the first period of renaissance that took place in the Eastern countries between the 9th and 12th centuries. Overall, it is regarded as one of the rare and valuable sources that provides comprehensive information on the history of the "Golden Age" of science in Muslim states, the scholars who were active during this period, and the works they produced.

In The Muslim Renaissance, various aspects of social life are examined with high scholarly rigor, including systems of governance among Eastern peoples, financial affairs, legal codes, court life, economic activities, craftsmanship, and trade. The book also thoroughly explores the flourishing of science during the 9th–10th centuries, religious education, scholars and religious leaders, encyclopedic thinkers, and the diverse fields in which they worked, such as poetry and prose, philology, Islamic sciences, literary studies, historiography, astronomy, and other disciplines. All of these themes are analyzed in depth and reflected in the work.

The central aim pursued by A. Metz in this book was to demonstrate that a renaissance period indeed occurred in the East during the 9th–12th centuries; therefore, the author titled his work The Muslim Renaissance. According to Metz, both the renaissance that took place in the East during the 9th–11th centuries and the renaissance that emerged in Europe during the 14th–15th centuries were grounded in the revival of the scientific achievements of ancient Greece.

Metz's book is regarded as an important fundamental study that, on the basis of historical sources, elucidates nearly all aspects of the social life of Eastern peoples (Abduhalimov, 2000:27).

In the study of the medieval culture of Eastern peoples, it is also appropriate to give special emphasis to the scholarly research of the Austrian-born scholar Gustav Edmund Grunebaum.[2] The author has produced a number of works devoted to Islamic culture and the rise of science in the Muslim world. In particular, his book *Classical Islam* (London, 1970) is regarded as an important source dedicated to the science and culture of Eastern peoples. In addition, among the edited volumes published under the supervision and with the direct participation of Grunebaum, the collection *Unity and*

[2] Gustav Edmund Grunebaum (1909–1972) was an Austrian- and American-born orientalist. He graduated from the Universities of Vienna and Berlin. From 1938 to 1942, he served as an assistant professor at the Asia Institute in New York, from 1943 to 1956 he was a professor of Arabic language and source studies at the University of Chicago, and in 1957 he became a professor at the University of Los Angeles.

Diversity in Muslim Civilization prepared within the framework of *Modern Islam: Studies in Cultural Self-Understanding* is considered one of the fundamental works providing valuable information on Muslim culture.

Another prominent historian is George Sarton, the author of *Introduction to the History of Science* (Sarton, 1927–1948). The first volume of this work is entitled *From Homer to Omar Khayyam* (1927), the second *From Rabbi Ben Ezra to Roger Bacon* (1931), and the third *Science in the Fourteenth Century* (1947–1948). This monumental study is regarded as a fundamental source that offers invaluable information about scholars, translators, and scientists who made significant contributions to the development of world science. The work also includes material on encyclopedic scholars who emerged from Central Asia.

Another researcher, Max Meyerhof, in his article *Science and Medicine*, addresses the medical knowledge and practices employed by medieval Eastern peoples. Likewise, the Iranian scholar Seyyed Hossein Nasr, in his book *Islamic Science and Civilization*, examines key issues related to the cultural development of Muslim societies. The English scholar Donald Hill analyzes important processes in science and technology that took place in ninth-century Baghdad, while the Italian orientalist **Carlo Nallino**, in his lectures delivered at Cairo University on the history of medieval astronomy, discusses the *Bayt al-Hikma* and the astronomers who were active there.

In general, the study of medieval Eastern science relies heavily on the works of foreign scholars such as A. Brown, F. Wüstenfeld, D. Kremers, O. Sayili, G. Le Strange, D. Sourdel, R. Morelon, J. Saliba, D. King, E. Kennedy, G. Hudonnard Roche, R. Rashed, Maria Teresa Debarnot, Donald Hill, J. Anawati, E. Savage-Smith, F. Micheau, and Mahdi Muhsin, whose writings constitute important research sources. Among Russian orientalists, issues related to the political, economic, and scientific-cultural development of Eastern peoples during this period are primarily reflected in the works of V. V. Bartold, O. G. Bolshakov, B. A. Rosenfeld, I. Yu. Krachkovsky, E. E. Bertels, A. B. Khalidov, and A. P. Yushkevich.

The book *The Arab Mathematicians and Astronomers and Their Works* by the renowned Swiss scholar Heinrich Suter is widely known. It provides information on the brief biographies and works of 528 Muslim mathematicians and astronomers who lived between 750 and 1600, as well as the locations where some of their manuscripts are

preserved. Despite later supplements by other authors in a similar scholarly spirit, this work remains an important source for the study of Eastern mathematics and astronomy. In 1932, the French historian of science J. Renaud published a treatise entitled *Additions and Corrections to Suter's Book on Arab Mathematicians and Astronomers*, based on manuscripts preserved in Rabat, the capital of Morocco. A comparable study was completed in 1936 by the German scholar Max Krause, entitled *Manuscripts on Muslim Mathematics in Istanbul*.

At the same time, the fundamental study published in 1983 by G. P. Matvievskaya and B. A. Rosenfeld is distinguished by its enrichment of the series of bio-bibliographical works devoted to the history of that period with extensive and comprehensive data.

During the 9th–11th centuries, the first period of renaissance occurred in the East. It was precisely in this era that great encyclopedic scholars emerged from the territory of Central Asia, including Abu Rayhan al-Biruni (Mukhamedov & Turambetov, 2023:105–110), Abu Nasr al-Farabi, Ibn Sina, regarded as one of the foremost authorities in medicine, Imam al-Bukhari, whose single work *Al-Jami' al-Sahih* occupies a position second only to the Holy Qur'an in Islam, Imam al-Maturidi, revered as the "rectifier of Muslim belief," and others who elevated the renown of their homeland.

"The overall cultural rise of Muslim civilization during the 9th–12th centuries reached its highest peak in the works of scholars from Mawarannahr and Khorasan. Whereas in the late Hellenistic period the center of science and culture was considered to be Alexandria in Egypt, during the 9th–12th centuries the development of science and culture constituting the 'Golden Age' of Muslim civilization shifted to Khorasan and the land beyond the Amu Darya, namely Mawarannahr (Central Asia). In that period, Central Asia produced such eminent scholars as Muhammad al-Khwarizmi (783–850), Ahmad al-Farghani (ca. 865), Muhammad ibn Ismail al-Bukhari (810–870), Muhammad al-Tirmidhi (824–892), Abu Nasr al-Farabi (873–950), Abu Rayhan al-Biruni (973–1048), Ibn Sina (980–1037), and Mahmud al-Zamakhshari (1075–1114), whose exceptional intellectual capacities spread the fame of their native land across the world, while their names were inscribed in history in indelible letters" (Khayrullaev, 1994:7–11; Mukhamedov, 2015:3–5).

Most of these scholars, owing to the political, economic, social, and scientific conditions of their time, lived and worked in various cities of the Caliphate governed by Arab caliphs, their deputies, or military commanders. Nevertheless, the majority of them were formed as scholars in their native lands. This clearly indicates that Central Asia possessed a suitable scientific environment and favorable conditions. It is also worth noting that the economic and spiritual-intellectual potential of the territories incorporated into the Arab Caliphate was, in many respects, higher than that of the Arabs themselves.

Indeed, the cultural life of Central Asia has deep historical roots that predate the Arab conquest. Due to its advantageous geographical and strategic location, this region from ancient times maintained continuous trade and economic relations with the Near and Middle East, Iran, Transcaucasia, Eastern Europe, India, and China, which facilitated sustained cultural exchange. Such a favorable geographical position created the conditions for the rapid development of cities, agriculture, various forms of local craftsmanship, science and learning, and overall economic potential.

Archaeological excavations conducted in Central Asia have uncovered both material and spiritual sources remains of cities and settlements, material evidence related to Zoroastrianism, Buddhism, Manichaeism, and Christianity, monuments of local craftsmanship, and samples of wall painting that demonstrate the existence of a distinctive and rich culture in this region even prior to the advent of Islam (Mukhamedov & Turambetov, 2021:68–73). According to the renowned encyclopedic scholar Abu Rayhan al-Biruni, in his work *Monuments of Past Generations*, calendars were already in use in Khwarazm and Sogdiana.

The cultural and scientific flourishing of the peoples of the East during the renaissance period of the 9th–12th centuries was, in many respects, the result of the productive intellectual activity of Central Asian scholars. During this era, it is impossible to imagine new discoveries in such fields as mathematics, geometry, astronomy, medicine, chemistry, mineralogy, philology, hadith studies, literature, and even music without the contributions of scholars from this region.

According to the assessments of scholars worldwide, the formation and development of algebra as a scientific discipline is inseparably linked with the outstanding Khwarazmian encyclopedic scholar Muhammad al-Khwarizmi (783–

850). Through his work *Al-Jabr wa'l-Muqabala*, he systematized several branches of mathematics and laid down its fundamental principles. Al-Khwarizmi introduced the number zero into arithmetic, thereby contributing decisively to the dissemination of the decimal numeral system that is widely used today. Although the decimal system was originally discovered by Indian scholars, it was largely due to al-Khwarizmi's services that it gained global recognition and widespread application.

Another prominent scholar, Ahmad al-Farghani (ca. 798–865), who was born in the Fergana Valley, demonstrated the achievements of Central Asian science in the ninth century in Baghdad, one of the major centers of culture of that time. Through his scholarly research, he made significant contributions to the development of astronomy, geometry, and mathematics. Ahmad al-Farghani also distinguished himself in the construction of astronomical instruments. Moreover, he was highly skilled in hydraulic engineering, as evidenced by his repair of the Nilometer on the banks of the Nile River in Egypt in 861. To this day, eight of his works have survived, among which *On the Celestial Motions and the Comprehensive Science of Astronomy*, translated into Latin and Hebrew in the twelfth century, deserves special attention. In October 1998, the 1200th anniversary of Ahmad al-Farghani was widely celebrated, and several of his works were published and presented to the public.

Another encyclopedic scholar was Abu Nasr al-Farabi (873–950), who was born in the city of Farab (Otrar), located near the confluence of the Aris River with the Syr Darya, received his education in Central Asia, and was intellectually formed in this region. Al-Farabi authored more than 160 works in the fields of astronomy, philosophy, philology, literature, logic, pedagogy, and music, thereby making an invaluable contribution to world science.

One of the greatest scholars in the field of medicine, Abu Bakr al-Razi (865–925), was also among the renowned scholars of Central Asia. He was born in the city of Ray in Khorasan but maintained close ties with scholars in Bukhara and engaged in scholarly activity in cooperation with them. In addition to medicine, Abu Bakr al-Razi demonstrated profound knowledge in chemistry, philosophy, physics, astronomy, mathematics, and other sciences.

By the ninth century, Islamic religious sciences such as hadith studies, Qur'anic exegesis (*tafsir*), jurisprudence (*fiqh*), and theology (*kalam*) also began to develop at a

high level. The scholarly legacy left by Central Asian scholars in these fields remains among the most valuable academic sources to this day. Outstanding among them is Muhammad ibn Ismail al-Bukhari (810–870), an unparalleled authority in hadith studies, whose work Al-Jami‘ al-Sahih is revered as second only to the Holy Qur’an. He was followed by other eminent hadith scholars such as Abu ‘Isa Muhammad al-Tirmidhi (824–892), Imam al-Nasa’i (9th century), ‘Abdullah al-Darimi al-Samarqandi (798–869), as well as the renowned theologian Abu Mansur al-Maturidi (d. 945), praised as the “rectifier of Muslim belief.” Later theologians such as Abu’l-Layth al-Samarqandi (ca. 920–1000) and Abu Salama al-Samarqandi (11th century), and the eminent jurist Burhan al-Din al-Marghinani (1123–1197), the author of foundational works in Islamic law, also originated from Central Asia.

Born in the land of Khwarazm, Mahmud al-Zamakhshari (1075–1114) was one of the greatest linguists of his time. His works on the Arabic language and its grammar continue to attract the attention of researchers due to their exceptional rigor and sophistication. His Qur’anic commentary *Al-Kashshaf* is still taught at al-Azhar University in Egypt, testifying to the depth and scholarly devotion with which the work was composed. History likewise bears witness to the fact that his treatise *Al-Mufassal*, devoted to Arabic phonetics and morphology, has been used by specialists for centuries.

A considerable portion of the scientific heritage of the encyclopedic scholars mentioned above has been lost for various reasons. Nevertheless, most of the surviving manuscripts are preserved in manuscript collections across the world. Nearly all of these works were translated into various foreign languages and utilized in different countries, thereby serving as a foundation for the emergence of the Renaissance in Western Europe.

CONCLUSION

The renaissance of science and culture in Central Asia during the 9th–12th centuries occurred largely due to the unparalleled contributions of local scholars. Prominent figures such as Muhammad al-Khwarizmi, Ahmad al-Farghani, Abu Nasr al-Farabi, Abu Rayhan al-Biruni, Ibn Sina (Avicenna), and other eminent thinkers achieved groundbreaking discoveries in fields including mathematics, medicine, astronomy,

philology, philosophy, and religious sciences. The works and scholarly legacy of these intellectuals served not only as foundational sources for Central Asia but also for Western scholars, thereby contributing decisively to the formation of the European Renaissance in later periods. Consequently, this renaissance period in the history of Central Asia has been preserved in history as an era that demonstrated the region's cultural and scientific potential on a global scale.

REFERENCES

1. Al-Bīrūnī, A. R. (2018). Monuments of past generations. Tashkent, Uzbekistan:Hilol Nashr.
2. Al-Fārābī, A. N. (1995). Collected works (Vols. 1–2). Tashkent, Uzbekistan:Fan.
3. Al-Bukhārī, M. ibn I. (1997). Al-Jāmiʿ al-Ṣaḥīḥ. Beirut, Lebanon:Dār Ibn Kathīr.
4. (Asar muallifi hijriy 256 yilda vafot etgan, ammo ilmiy ishlarda zamonaviy nashr yili berilishi maqbul.)
5. Al-Zamakhsharī, M. (2009). Al-Kashshāf ʿan ḥaqāʾiq al-tanzīl. Cairo, Egypt:Dār al-Ḥadīth.
6. Al-Khwārizmī, M. (1989). Al-Jabr wa'l-Muqābala. Cairo, Egypt:Dār al-Kutub al-ʿIlmiyya.
7. Al-Farghānī, A. (1998). On the celestial motions and the comprehensive science of astronomy (Latin and Arabic ed.). Frankfurt am Main, Germany:Institut für Geschichte der Arabisch-Islamischen Wissenschaften.
8. Metz, A. (1937). The Muslim renaissance. Oxford, UK:Oxford University Press.
9. Grunebaum, G. E. von. (1970). Classical Islam:A history 600–1258. London, UK:George Allen & Unwin.
10. Sarton, G. (1927–1948). Introduction to the history of science (Vols. 1–3). Baltimore, MD:Williams & Wilkins.
11. Meyerhof, M. (1936). Science and medicine in the Muslim East. Baltimore, MD:Johns Hopkins Press.
12. Mukhamedov, N. (2015). Issues of the scientific heritage of Mahmud Zamakhshari. Eastern Torch, 1(1), 3–5. https://inlibrary.uz/index.php/eastern-torch/article/view/9585
13. Mukhamedov, N., & Turambetov, N. (2023). Humanistic ideas:Kindness, generosity, and tolerance in the work of Maverannahr scientists. EPRA International Journal of Research and Development (IJRD), 8(12), 322–325.
14. Mukhamedov, N., & Turambetov, N. (2023). Methodologies employed by al-Biruni in the analysis of religious systems. Asian Journal of Multidimensional Research, 12(12), 105–110.
15. Nasr, S. H. (1968). Islamic science and civilization. Cambridge, MA:Harvard University Press.
16. Mukhamedov, N., & Turambetov, N. (2021). The origins of religious tolerance in Central Asia. International Journal of Social Science & Interdisciplinary Research, 10(12), 68–73. https://www.gejournal.net/index.php/IJSSIR/article/view/105
17. Hill, D. R. (1971). Islamic science and engineering. Edinburgh, UK:Edinburgh University Press.
18. Bartold, V. V. (1963). History of the cultural life of Central Asia. Moscow, USSR:Nauka.
19. Bolshakov, O. G. (1975). Medieval science and culture in Central Asia. Moscow, USSR:Nauka