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THE TRANSFORMATION OF ISLAMIC CIVILIZATION: A HISTORICAL ANALYSIS OF THE CLASSICAL PERIOD AND THE GOLDEN AGE

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Abstract

This research examines the transformation of Islamic civilization from the classical period to the golden age, focusing on contributions to science, culture, and politics. This period, which lasted from the 7th to the 13th century, was the pinnacle of Islamic civilization's glory with achievements in mathematics, medicine, astronomy, and philosophy. The research method used is descriptive-qualitative with historical analysis, supported by primary literature such as books and scientific journals. The results of the study show that during this period, Islamic civilization was able to absorb and develop knowledge from Greece, Persia, and India, through institutions such as Baitul Hikmah in Baghdad. The contributions of Muslim scientists such as Al-Khwarizmi and Ibn Sina had a long-term impact on the development of modern science in Europe through translation into Latin. In conclusion, the transformation of Islamic civilization in the Golden Age significantly built the foundation of global science and triggered an intellectual awakening in Europe during the Renaissance period.

Keywords:

Islamic Civilization, Classic Period, Golden Age, Science, Baitul Hikmah

INTRODUCTION

Islamic history has important periods that record extraordinary achievements in various aspects of life, especially in the classical and golden ages of Islam. This period, which spanned the 7th century to the mid-13th century, is often considered to be the period in which the Islamic world reached its zenith. During this time, Islamic civilization not only succeeded in developing political and military power but also became the intellectual and cultural center of the world. During this period, the Islamic world not only experienced geographical expansion but also became a bridge between ancient and modern sciences¹. The

¹ Syafri Gunawan, "Peranan Islam Dalam Pembangunan Pradaban Dunia," *Jurnal el-Qanuniy: Jurnal Ilmu-*

great transformation that occurred during this period brought significant changes whose impact is still felt today.

The classical period and golden age of Islam began after the death of the Prophet Muhammad SAW in 632 M when the companions of the Prophet continued their mission by establishing an Islamic government under the leadership of Khulafaur Rashidin. During this period, Islam not only united the Arabian Peninsula, but also began to spread to various regions outside of Arabia, such as Persia, Syria, Egypt, and North Africa. One of the key features of this period was the ability of Islamic leaders to build a strong political and administrative system, which was able to maintain the stability of a vast and diverse region. With a well-organized government, Muslims can create political stability that is the foundation for intellectual and cultural development².

After the Khulafaur Rashidin period, the Umayyad Dynasty took power and continued the expansion of Islam until it reached its peak of glory. During the Umayyad Dynasty, Islamic territory stretched from Spain in the west to India in the east. This very large area allows for cross-cultural interactions that enrich Islamic culture. Through this interaction, the science of various civilizations, such as Greece, Persia, and India, was introduced and adapted to the Islamic world. In addition, the Umayyad Dynasty also played a role in introducing Arabic as the official language of government administration, which helped unite various regions under one cultural identity³.

The peak of the glory of Islamic civilization occurred during the Abbasid Dynasty, especially in the 8th to 13th centuries, often called **the Islamic Golden Age**. During this period, Baghdad, the capital of the Abbasid Dynasty, developed into one of the world's largest centers of science and culture. Abbasid caliphs, such as Harun al-Rashid and Al-Ma'mun, established educational and research institutions that attracted scholars from around the world. One of the most famous institutions is **the Baitul Hikmah**, which was instrumental in the translation and development of science from Greek, Persian, and Indian classics into Arabic⁴.

The contribution of Islamic civilization in this golden age is very significant in various fields of science. In the field of mathematics, **Al-Khawarizmi** introduced the concept of algebra, which became the basis of the development of modern mathematics. In the field of astronomy, Muslim scientists such as **Al-Battani** and **Al-Zarqali** created star catalogs and theories about planetary motion that were later adopted by European scientists. In the field of medicine, **Ibn Sina** wrote the book "*The Canon of Medicine*", which became the main reference in Europe for centuries. In addition, Muslim scientists also make great contributions in the fields of philosophy, chemistry, physics, and literature.

Although the golden age of Islam ended with the fall of Baghdad due to the Mongol attack in 1258 M, the intellectual and cultural heritage of Islam still has a great influence on the development of the world. The knowledge developed by Muslim scientists during this

Ilmu Kesyariahan dan Pranata Sosial 5, no. 1 (2019): 45–62, <https://doi.org/10.24952/el-qonuniy.v5i1.1763>.

² Moch Choirul Rizal, Fenolia Intan Saputri, dan Siti Annisa Rahmi Imanda, "Sejarah Pemerintahan Islam: Suatu Tinjauan Singkat," *Verfassung: Jurnal Hukum Tata Negara* 2, no. 1 (2023): 41–62, <https://doi.org/10.30762/vjhtn.v2i1.212>.

³ Aldi Cahya Maulidan dkk., "Sejarah Peradaban Bani Umayyah dan Pengaruhnya Terhadap Penyebaran Islam di Nusantara Tujuan dari artikel ini adalah untuk menjelaskan sejarah Dinasti Bani Umayyah , dimulai dengan masa Syam dituturkan dalam banyak hadits SWT , Syria memang memiliki peson," *Jurnal Artefak* 11, no. September (2024): 159–80, <https://doi.org/http://dx.doi.org/10.25157/ja.v11i2.14983>.

⁴ Siti Syaidariyah Hasibuan, "Perkembangan Islam Zaman Keemasan Bani Abbasiyah (650 M – 1250 M)," *EDU-RILIGIA: Jurnal Ilmu Pendidikan Islam dan Keagamaan* 5, no. 4 (2022): 353–74, <https://doi.org/10.47006/er.v5i4.12934>.

period was then spread to Europe through Andalusia and triggered the **Renaissance**, a period of intellectual awakening in Europe. Through translations carried out in Muslim Spain, European scientists were able to study the science of the Islamic world, which became the foundation for the development of modern science.

However, although Islam's contribution to the development of the modern world is significant, the study of the influence of Islamic civilization in the classical and golden ages is often overlooked in the discourse of world history. Many assume that the development of modern science only began with the Renaissance in Europe, without realizing that many of the scientific ideas and discoveries used by European scientists are rooted in the intellectual heritage of Islam. Therefore, it is important to review the transformation of Islamic civilization in this period and explore how this intellectual heritage has made a major contribution to the development of the modern world.

Through this research, it is hoped that the factors that drove the transformation of Islamic civilization in the classical period and the golden age can be revealed in more depth. This research will also explore how the achievements of Islamic civilization in the political, military, and scientific fields have a long-term impact that is still felt today. In addition, this research also aims to give a greater appreciation for the role of Muslims in building a world civilization that is inclusive and open to the development of science.

METHODOLOGY

This study uses a descriptive-qualitative approach to study and analyze the development of Islamic civilization in the Classical and Golden Ages. This method aims to describe in detail the transformation process that occurred in the political, social, scientific, and cultural aspects during the period. The data in this study was obtained from primary sources, consisting of book literature and scientific journals. These books and articles in scientific journals serve as the main material for exploring the development of Islamic civilization. The literature provides a strong theoretical foundation and in-depth academic analysis of the history, achievements, and impacts of Islamic civilization in its golden age. By using verified literature, this research can provide a valid and credible perspective on the topic discussed. The approach used is historical analysis, which focuses on understanding the social, political, and intellectual processes that occurred during that period. Through this analysis, the research aims to understand how the achievement of Islamic civilization in the classical and golden ages had an impact on the development of global science and culture. This approach allows research to comprehensively uncover the contribution of Islamic civilization in shaping world civilization

RESULT and DISCUSSION

A. History of Classical Islam and The Golden Age

The History of Khulafaur Rashidin: The Foundations of Islamic Government

After the death of the Prophet Muhammad SAW in 632 M, Muslims faced a critical transition period regarding leadership, as the Prophet did not leave any direct clues regarding his successor. The Companions deliberated and appointed Abu Bakr Ash-Siddiq as the first caliph, marking the beginning of the Khulafaur Rashidin system. This period consisted of four caliphs: Abu Bakr, Umar bin Khattab, Uthman bin Affan, and Ali bin Abi Talib. The period of Khulafaur Rashidin played an important role in forming an Islamic government, expanding the territory, and implementing sharia in the new territories controlled⁵.

⁵ Ahmad Al-Usairy, *Sejarah Islam: Sejak Zaman Nabi Adam Hingga Abad XX*, Cet. 9 (Jakarta: Akbarmedia, 2011), 141.

Abu Bakr's Leadership (632–634 M) was marked by internal challenges, such as the Riddah War, in which he managed to quell the rebellion of apostates after the death of the Prophet. Abu Bakr also began military expansion beyond the Arabian Peninsula, which was then continued by subsequent caliphs⁶.

Umar bin Khattab (634–644 M), The second caliph, was known for his administrative prowess and outstanding territorial expansion. Under his leadership, Muslims conquered the Persian Empire and most of the Byzantine Empire, including Syria, Egypt, and Iraq. Umar introduced a more organized administrative system, including the establishment of Diwans (financial bureaus) and the appointment of governors in new territories. His government became a model for future Islamic government⁷.

Uthman bin Affan (644–656 M), the third caliph, expanded Islamic territory to North Africa and Central Asia. One of his biggest contributions is the preparation and collection of the Qur'an mushaf in one standard version, to maintain the authenticity of the reading. However, Uthman faced criticism over accusations of nepotism, which fueled rebellion and political instability at the end of his reign⁸.

Ali bin Abi Thalib (656–661 M), The fourth caliph, faced great challenges from within the Muslims, such as political conflicts that led to the Jamal War and the Siffin War. Both wars were rooted in dissatisfaction with Ali's leadership and Uthman's death. Ali's leadership period was the beginning of the division of Muslims into Sunnis and Shia. Ali was eventually killed by the Khawarij group, which disagreed with his political policies⁹.

The Khulafaur Rashidin period as a whole was significant in the formation of the political and social structure of Islam. During this time, Muslims managed to build a strong system of government and expand their territory massively. Islamic Sharia is also applied as a legal and social guideline in the controlled areas. The success of this period was not only in military and political aspects but also in creating stability that allowed the intellectual and spiritual progress of Muslims.

Khulafaur Rashidin's leadership laid an important foundation for the political structure of Islam in later times, such as in the Umayyad and Abbasid dynasties. The deliberative system in the election of the first caliph became the initial model of the concept of democracy in Islam. However, in the period after that, the monarchy system began to be implemented. The period of Khulafaur Rashidin also shows how Islam was able to unite various tribes and nations under one just leadership, although divisions began to emerge at the end of this period.

Thus, the history of Khulafaur Rashidin is an important phase in the development of Islamic civilization, providing the basis for an influential political, legal, and social structure until later times. The success of the caliphs is not only seen in the military aspect but also in the enforcement of Islamic values in the life of Muslim society.

The Umayyad and Abbasid Dynasties: Government Policy, Territorial Expansion, and the Construction of Cultural Centers

After the time of Khulafaur Rashidin, Islamic rule was continued by the Umayyad Dynasty (661–750 M) and the Abbasid Dynasty (750–1258 M), which were centered in Damascus and Baghdad, respectively. The Umayyad dynasty began under the leadership of Muawiyah bin Abu Sufyan, who consolidated power after the conflict during the time of Ali

⁶ Al-Ussairi, 145.

⁷ Firas Al Khateeb, *Sejarah Islam Yang Hilang*, Cet. 1 (Yogyakarta: PT Benteng Pusaka, 2016), 54.

⁸ Ajeng Kartini dan Amalia Wahyuni, *Sejarah Islam*, Cet. 1 (Banjarmasin: Universitas Islam Kalimantan Muhammad Arsyad Al-Banjari Banjarmasin, 2023), 32.

⁹ Siti Zubaidah, *Sejarah Peradaban Islam, Sejarah Peradaban Islam*, vol. 1 (Medan: PERDANA PUBLISHING, 2016), 67.

bin Abi Talib. The Umayyads are known for their massive expansion of Islamic territory to include Spain and India. They introduced a centralized administrative system and made Arabic the official language, strengthening trade through a uniform currency. Even so, the Umayyad government was criticized for nepotism and elitist dynasties, sparking a rebellion that overthrew them¹⁰.

The Abbasid dynasty replaced the Umayyads after a revolution led by Abbas's descendants, the uncle of the Prophet Muhammad (peace be upon him). Abbasids moved the capital to Baghdad, which developed into a global center of trade and intellectuals. Abbasid caliphs, such as Harun al-Rashid and Al-Ma'mun, supported the development of science by establishing the Baitul Hikmah. Here, scientific works from Greece, Persia, and India were translated and developed by Muslim scientists such as Al-Khawarizmi and Ibn Sina. The Abbasids implemented a more inclusive government by involving non-Arabs in power structures and expanding international trade networks¹¹.

Despite achieving glory in the 9th and 10th centuries, the Abbasids weakened due to internal divisions, foreign invasions such as the Mongols, and the emergence of a regional caliphate. In 1258, Baghdad was destroyed by Mongol forces, marking the end of Abbasid rule. These two dynasties made a major contribution to expanding Islamic civilization, developing science, and creating cultural centers that have influenced the modern world to this day.

The Golden Age of Islamic Science: The Contribution of Great Scientists and the Role of Baitul Hikmah

The Islamic Golden Age during the Abbasid Dynasty (750–1258 AD) was one of the pinnacles of intellectual civilization in history. During this period, Muslim scientists made great contributions in various fields of science such as mathematics, astronomy, medicine, philosophy, and natural sciences. One of the most important intellectual centers of that time was the Baitul Hikmah in Baghdad, which was founded by Caliph Al-Ma'mun. Baitul Hikmah became a center for translation and research, where scientific works from Greece, Persia, and India were translated and further developed. This process enriched Islamic civilization and laid the foundation for modern science in Europe¹².

In Baitul Hikmah, scholars such as Al-Khawarizmi, Ibn Sina, Al-Biruni, and Al-Haytham created innovative works that became the foundation for various disciplines. Al-Khawarizmi is known as the father of algebra, and his book *Kitab Al-Jabr wa-l-Muqabala* introduced a systematic method for solving quadratic equations. In addition, he developed the decimal number system and the use of zeros, which were adopted from India. Ibn Sina, a physician and philosopher, wrote *Al-Qanun fi Al-Tibb* (The Canon of Medicine), which became the main reference in the world of medicine for centuries, even in Europe. Al-Biruni, an all-round scientist, is best known for his high-accuracy measurements of the Earth's radius as well as his contributions to astronomy and mathematics. Al-Haytham, a pioneer in optics, wrote the *Book of Optics*, which became the basis for the modern theory of light. He stated that vision occurs because light enters the eye, rejecting previous Greek theories¹³.

¹⁰ Fatkhul Wahab, "Sejarah dan Perkembangan Dinasti Bani Umayyah dalam Dunia Islam," *Jurnal Pusaka* 13, no. 2 (2023): 121–35, <https://doi.org/https://doi.org/10.35897/ps.v13i02.1138>.

¹¹ Sintia Aprianty, "Refleksi Awal Terbentuknya Dinasti Abbasiyah," *Tanjak: Sejarah dan Peradaban Islam* 2, no. 2 (1970): 171–80, <https://doi.org/10.19109/tanjak.v2i2.12860>.

¹² Syaidariyah Hasibuan, "Perkembangan Islam Zaman Keemasan Bani Abbasiyah (650 M – 1250 M)," 353–74.

¹³ Cecep Hidayat, Taufik Hidayat, dan Sandi Yoga Permana, "Sains dan Sastra Pada Zaman Dinasti Abbasiyah," *Tanjak: Sejarah dan Peradaban Islam* 4, no. 3 (2024): 247–53,

In addition to contributions to science, this golden age also made a great contribution to philosophy. Muslim philosophers such as Al-Farabi, Ibn Rushd, and Al-Ghazali spread Greek philosophy to the Islamic world. Ibn Rushd is best known for his commentary on Aristotle's work, which was later translated into Latin and influenced scholastic philosophy in Europe. The Abbasid caliph supported the translation of Greek, Persian, and Indian works, which allowed Muslim scientists to study and develop ancient knowledge and create innovations. The intellectual legacy of the Islamic Golden Age has had a far-reaching impact on the science of the modern world. The works of Muslim scientists were translated into Latin and introduced to Europe through Andalusia, especially in the city of Cordoba, which became a bridge between the Islamic world and the West. This process sparked an intellectual revival in Europe, known as the Renaissance.

In addition to Al-Khawarizmi, Ibn Sina, and Al-Biruni, Jabir Ibn Hayyan in chemistry and Al-Razi in medicine also made great contributions. Jabir is considered the father of modern chemistry because of his work on distillation and crystallization. Al-Razi is known as the Book of al-Hawi, which has been the main guide in European medicine for centuries. In astronomy, Al-Battani calculated the length of the solar year with high accuracy, and Ibn al-Haytham through his theory of light played a role in the development of the scientific method which was later adopted by European scientists such as Kepler and Newton.

The scientific legacy of the Islamic Golden Age not only influenced science but also formed the foundation for modern philosophical thought and scientific methods. The work of Muslim scientists in mathematics, medicine, and philosophy has made a significant contribution to the development of global science. An open view of outside knowledge and the spirit of innovation from this period remain important lessons for the modern world. The Islamic Golden Age shows how Islamic civilization became a global intellectual center that influenced the development of science around the world.

B. Political and Military Transformations in Islamic Civilization in the Classical Period

The Classical Period in Islamic history spanned the period from 632 M to about 1258 M, marked by major developments in politics, military, and extensive geographical expansion. This transformation began after the death of the Prophet Muhammad SAW and continued by the leadership of Khulafaur Rashidin (the first four caliphs), followed by the Umayyad and Abbasid Dynasties. During this period, Muslims not only expanded their territory but also succeeded in building a strong system of government and administration and uniting various heterogeneous regions under a single Islamic government. This political and military transformation formed the basis for a strong and organized Islamic civilization, creating an empire that influenced various aspects of the world's politics and culture at that time and beyond.

Khulafaur Rashidin's Leadership and Consolidation of Power

After the death of the Prophet Muhammad SAW in 632 M, Muslims faced great challenges in determining the successor to the leadership. There was no clear instruction from the Prophet Muhammad regarding who would replace him as the leader of the ummah, so through deliberations in the Saqifah of Banu Sa'idah, the companions appointed Abu Bakr Ash-Shiddiq as the first caliph¹⁴. Abu Bakr's leadership period is known for the consolidation of Islamic power which was threatened with division due to the Riddah War, where several tribes in the Arabian Peninsula rebelled and refused to pay zakat. Abu Bakr

<https://doi.org/10.19109/tanjak.v4i3.24489>.

¹⁴ Al-Usairy, *Sejarah Islam: Sejak Zaman Nabi Adam Hingga Abad XX*, 144-45.

succeeded in quelling this rebellion and reuniting the Arabian Peninsula under one Islamic leadership. The second caliph, Umar bin Khattab (634–644 M), played a crucial role in significantly expanding Islamic territory and establishing a strong administrative system¹⁵. Under his leadership, the Muslims managed to conquer the Sassanid Empire in Persia and the Byzantine territories in Syria and Egypt¹⁶. This expansion brought Muslims to new territories, which eventually became part of the Islamic caliphate. One of Umar's greatest contributions was the establishment of a highly organized administrative and legal system, including the appointment of governors (guardians) in each newly conquered territory, the establishment of diwans (financial bureaus), and the fair distribution of *ghanimah* (spoils of war). Umar also introduced a caliphate system governed by Islamic and customary law, creating the basis for an organized and efficient Islamic government.

During the time of Uthman bin Affan (644–656 M), regional expansion continued, with the conquest of North Africa and parts of Central Asia. However, Uthman is also known for other important policies, namely the collection and bookkeeping of the Qur'an *mushaf*¹⁷. Before Uthman's time, the reading of the Qur'an had several variations, so to maintain the authenticity of the Qur'anic text, Uthman ordered to make one official *mushaf* that was disseminated throughout the Islamic region. However, his presidency was also marked by criticism of alleged nepotism and dissatisfaction with certain policies, which eventually sparked a rebellion and led to his death. Ali ibn Abi Talib (656–661 M) was the last caliph of *Khulafaur Rashidin*, and his reign was fraught with internal conflicts, including the *Jamal War* and the *Siffin War*, caused by political and religious strife¹⁸. Although Ali tried to restore stability, these conflicts were the beginning of a Sunni-Shia split that continues to this day. After Ali's death, the caliphate passed into the hands of Muawiyah bin Abu Sufyan, who founded the Umayyad Dynasty, marking the end of the *Khulafaur Rashidin* system and the beginning of the dynastic system of Islamic rule.

The Umayyad Dynasty and Massive Expansion

The Umayyad dynasty (661–750 M) played an important role in expanding Islamic rule to a wider territory than ever before. Muawiyah, the founder of this dynasty, moved the Islamic capital from Medina to Damascus, which became the center of political and administrative power. Under Umayyad rule, Islamic dominion stretched from Spain (*Al-Andalus*) in the west to India in the east, making it one of the largest empires in world history. This expansion was carried out not only through the military, but also through diplomacy, trade, and alliances with local powers.

One of the most prominent aspects of Umayyad rule was their ability to unite vast and diverse territories under a single system of government. A centralized administrative system was introduced, in which the regions were divided into provinces led by governors who were directly responsible to the caliph. In addition, Arabic was made the official language of government, and uniform currencies were introduced throughout the empire, which facilitated trade and communication between regions¹⁹. However, the Umayyad

¹⁵ Lukman Fajariyah, "The Regulation and Reconciliation of Abu Bakar Ash-Shiddiq: Study The Historical Cycle Movement Ibnu Khaldun Perspective," *Jurnal Tamaddun* 11, no. 2 (2023): 109–20, <https://doi.org/http://dx.doi.org/10.24235/tamaddun.v11i2.13811>.

¹⁶ Al-Usairy, *Sejarah Islam: Sejak Zaman Nabi Adam Hingga Abad XX*, 156.

¹⁷ Al-Usairy, 171.

¹⁸ Zubaidah, *Sej. Perad. Islam*, 1:70–71.

¹⁹ N Hidayah, "Revolusi dan Kontinuitas: Membahas Warisan Budaya Bani Umayyah dalam Konteks Dunia Modern," *Holistik Analisis Nexus* 1, no. 6 (2024): 223–31, <https://doi.org/https://doi.org/10.62504/nexus672>.

Dynasty also faced many challenges, especially from mawali (non-Arab Muslims) who felt they were not fairly represented in government. Another criticism came from Shia groups, who rejected the legitimacy of Umayyad rule because of the belief that only the descendants of Ali had the right to lead the Muslims. In addition, the Khawarij group also opposed the Umayyad government for theological reasons. This discontent eventually triggered a series of rebellions that led to the fall of the Umayyad Dynasty and the rise of the Abbasid Dynasty in 750 M.

The Abbasid Dynasty and Changes in the System of Government

When the Abbasids overthrew the Umayyad Dynasty in 750 M, there was a significant change in the system of government and the focus on power expansion. The Abbasids moved the capital to Baghdad, which developed into the world's cultural and intellectual center at the time. Abbasid caliphs, such as Harun al-Rashid and Al-Ma'mun, paid great attention to the development of science, culture, and a more inclusive administration of government²⁰.

One of the hallmarks of the Abbasid Dynasty was their efforts to involve more non-Arab Muslims in the government²¹. This is different from the exclusive policy implemented by the Umayyad Dynasty, which tended to discriminate against mawali. By involving various ethnicities and groups in the government, the Abbasids succeeded in creating a stable and strong multicultural government. Military expansion continued under the Abbasids but was more focused on consolidating existing territories than conquering new territories. Under Abbasid rule, the Islamic Caliphate reached its peak of glory, in the fields of politics, economics, and science. Baghdad has become a global center of trade and culture, as well as a gathering place for scholars from all over the world. The Abbasid dynasty also built the Baitul Hikmah, a translation and research institution that played an important role in the translation and development of science from various ancient civilizations.

However, although the Abbasid Dynasty reached the peak of its glory, it also faced various challenges, including internal divisions, rebellions, and invasions from foreign powers. One of the greatest challenges came from the Mongol Raid, which finally destroyed Baghdad in 1258, marking the end of the heyday of the Abbasid Dynasty and the end of the Classical Period in Islamic history²². The political and military transformations that occurred during the Islamic Classical Period played an important role in the formation of Islamic civilization. Under the leadership of Khulafaur Rashiddin, the Umayyad Dynasty, and the Abbasids, Muslims managed to expand their territories, create an efficient system of government, and unite various ethnic and religious groups under a single caliphate. This transformation not only resulted in great military power, but also laid the foundation for scientific, cultural, and economic developments that would influence the world for centuries. Despite being marked by internal conflicts and external challenges, the success of building a strong political and military system allowed Islam to develop into one of the most influential civilizations in world history.

C. Scientific and Intellectual Transformation in the Abbasid Period

²⁰ Daffa Muhammad, "Peran Pemerintahan Daulah Abbasiyah dalam Peradaban Islam di Baghdad (750-1258 M)," *Al-Ibrah : Jurnal Pendidikan dan Keilmuan Islam* 9, no. 1 (2024): 16–39, <https://doi.org/10.61815/alibrah.v9i1.361>.

²¹ Syamsul Bakri, *Sejarah Kebudayaan Islam*, Cet. 1 (Surakarta: EFUDEPRESS, 2022), 74.

²² Ahmad Tabrani Agus Sutiyono Agus Khunaifi Dwi Istiyani Eva Nur Apriliana Mahfud Junaedi Musthofa dan Direkto, *Perkembangan Islam Pasca Khulafaur*, Cet. 3 (Jakarta: Dirjen Pendis Kemenag RI, 2023), 52.

The Abbasid period (750–1258 M) is known as the Islamic Golden Age, during which science, art, and philosophy reached the peak of their glory. Under the reign of Harun al-Rashid (786–809 M) and his son Al-Ma'mun (813–833 M), Islamic civilization developed rapidly, especially in the fields of science and intellectuality. The city of Baghdad, which became the capital of the Abbasid Dynasty, was not only the center of political power but also the center of world science. The Abbasid dynasty succeeded in creating an atmosphere that supported the development of science by patronizing scientists, establishing educational institutions, and encouraging the translation of classical works from the Greek, Persian, and Indian civilizations. During this period, Muslims made important breakthroughs in various disciplines such as mathematics, astronomy, medicine, philosophy, and natural sciences. The development of science during the Abbasid period was not only inherent in the Islamic tradition but also enriched the world's intellectual heritage. Here is an overview of the main contributions of Muslim scientists and the impact of the intellectual transformation of this time²³.

The role of his caliph inevitably supported this progress. The translation of non-Arabic books into Arabic, initiated by the caliph Ja'far al-Mansur, was a major factor in this development. Abdullah bin al-Muqaffa (d. 141 AH/759 M) was one of the famous translators who contributed to the translation of some Western sciences so that the layman could understand them²⁴.

Mathematical Sciences: Al-Khawarizmi and Algebraic Development

One of the greatest scholars of the Abbasid period was Al-Khawarizmi (780–850 AD), who is considered the father of algebra. Al-Khawarizmi's work entitled "*Kitab Al-Jabr wa-l-Muqabala*" became the basis for the development of modern algebra²⁵. In his work, Al-Khawarizmi introduced a systematic method for solving quadratic equations and other algebraic problems. He developed important concepts in mathematics, such as basic algebraic operations and the use of symbols for variables. The term "*algebra*" comes from the word in the title of his book, and the word "algorithm" used in the modern technological world comes from his name. In addition to algebra, Al-Khawarizmi also made an important contribution to the field of arithmetic by introducing the decimal number system and the use of zeros, which were adopted from the Indian numeral system. His work in the field of mathematics was translated into Latin and became a major reference for European scientists for centuries. The use of the decimal number system and algebraic concepts introduced by Al-Khawarizmi became the foundation for the development of mathematics in the Western world.

Medical Sciences: Ibn Sina and The Canon of Medicine

In the field of medicine, the most influential Muslim scientist was Ibn Sina (Avicenna), who was born in 980 M in Bukhara (now Uzbekistan). Ibn Sina is known for his monumental work, "*Al-Qanun fi Al-Tibb*" (The Canon of Medicine), which became one of the most important medical books in history. His work combines Greek, Indian, and Persian medical sciences, and adds to his research in various aspects of medicine, such as anatomy, pharmacology, and pathology. The Canon of Medicine was translated into Latin and used as the main reference text in European universities until the 17th century. One of Ibn Sina's

²³ Nunzairina, "Dinasti abbasiyah: kemajuan peradaban islam, pendidikan dan kebangkitan kaum intelektual," *JUSPI (JURNAL SEJARAH PERADABAN ISLAM)* 3, no. 2 (2020): 93–103, <https://doi.org/10.30829/juspi.v3i1.4382>.

²⁴ Musthofa dan Direkto, *Perkembangan Islam Pasca Khulafaur*, 46.

²⁵ Ricky Rudiansyah dan Marcellino Asanuddin, "Sumbangsih Al-Khawarizmi dalam Matematika dan Astronomi," *Majelis Taklim Al Khawarizmi-Binus University*, 2024, <https://student-activity.binus.ac.id/mt/2024/06/21/sumbangsih-al-khawarizmi-dalam-matematika-dan-astronomi/>.

major contributions to medicine was his explanation of the diagnosis and treatment of various diseases, including infectious diseases. He also introduced the concept of quarantine to prevent the spread of disease, a practice that is very relevant in controlling infectious disease outbreaks. In addition, Ibn Sina developed various clinical methods for diagnosis and treatment, such as pulse monitoring and holistic patient observation. His works were not only influential in the Islamic world but also helped accelerate the development of medical science in the Western world.

Astronomy: Al-Biruni and Al-Battani

The field of astronomy also experienced rapid progress during the Abbasid period, with contributions from scientists such as Al-Biruni and Al-Battani. Al-Biruni (973–1048 M) is known as one of the greatest Muslim scientists in astronomy and geography²⁶. He developed theories about the motion of planets and stars and calculated the distance between the earth and the sun with an impressive degree of accuracy. One of Al-Biruni's greatest contributions was his observations of the Earth's rotation and his attempts to measure the Earth's radius using scientific methods. His calculation of the radius of the earth was close to the correct number, an extraordinary achievement at the time. In addition to Al-Biruni, Al-Battani (858–929 M) was a famous astronomer who made important breakthroughs in understanding the motion of celestial bodies. He calculated the length of the solar year with remarkable accuracy and corrected many errors in earlier astronomical observations, especially those of Ptolemy. His work was translated into Latin and influenced European astronomers such as Copernicus and Kepler. These observations made by Muslim astronomers are an important foundation for the development of astronomy in the modern world.

Greek Philosophy and Influence: Ibn Rushd and Al-Farabi

The Abbasid golden age also produced a great contribution to the field of philosophy, especially through the efforts of Muslim scholars to translate and develop the works of Greek philosophy. One of the greatest Muslim philosophers of this period was Ibn Rushd (Averroes), who was known for his commentary on Aristotle's works. Ibn Rushd played an important role in spreading Greek philosophy to the Islamic world and Europe. His work on the relationship between reason and revelation became one of the most important intellectual debates in the Islamic and Christian philosophical traditions of the Middle Ages²⁷. Al-Farabi (872–950 M), a Muslim philosopher and politician, also played a key role in developing Greek philosophy, especially the works of Plato and Aristotle²⁸. He wrote about ethics, logic, and politics, and created a philosophical framework that linked Greek philosophy to the Islamic worldview. One of his most famous works is "Al-Madina al-Fadila" (The Main City), which depicts the concept of an ideal state based on Islamic principles. The contributions of Al-Farabi and Ibn Rushd were very influential on the development of philosophy in the Western world, especially during the Renaissance.

²⁶ Ryan Setiawan, "Jabir al-Battani (w. 317 H/929 M) Karya dan Sumbangannya Dalam Bidang Astronomi," Fakultas Agama Islam UMSU, 2020, <https://fai.umsu.ac.id/jabir-al-battani-w-317-h-929-m-karya-dan-sumbangannya-dalam-bidang-astronomi/>.

²⁷ Muhammad Asep Setiawan, "Konstruksi Filsafat Ibnu Rusyd Dan Pengaruhnya Terhadap Peradaban Barat," *Indonesian Journal of Islamic Theology and Philosophy* 4, no. 1 (2022): 21–40, <https://doi.org/http://dx.doi.org/10.24042/ijitp.v4i1.9469>.

²⁸ Leo Strauss dan Joseph Cropsey, "An Introduction and Biography of Al-Farabi," The Foundation for Constitutional Government Inc, 2024, <https://thegreatthinkers.org/al-farabi/introduction/>.

Baitul Hikmah and the Translation Process

The success of Muslim scientists in developing science is inseparable from the role of intellectual institutions established during the Abbasid period, such as Baitul Hikmah (House of Wisdom). Founded by Caliph Harun al-Rashid and expanded by his son Al-Ma'mun, Baitul Hikmah became the largest center of translation and research of its time. Scientists from various cultural and religious backgrounds work together at Baitul Hikmah to translate and develop classical works from Greece, Persia, and India. Baitul Hikmah served as an intellectual center, where important works in philosophy, mathematics, astronomy, and medicine were translated into Arabic and later further developed by Muslim scientists. The Abbasid caliph fully supported intellectual activity in Baitul Hikmah, by patronizing scholars and funding massive translation projects. One of the greatest achievements of this institution was the translation of Aristotle's works, which were later adopted and developed by Muslim philosophers such as Al-Farabi and Ibn Rushd. The works translated into Baitul Hikmah were then spread throughout the Islamic world and Europe, becoming the foundation for the development of modern science.

The Influence of Islamic Science on the Western World

The intellectual transformation that occurred during the Abbasid period was not only limited to the Islamic world but also had a significant impact on the Western world. The works of Muslim scientists were translated into Latin through Muslim Spanish (Andalusia) and became the basis for the development of science in Europe during the Renaissance. Scientists such as Copernicus, Kepler, and Galileo were greatly influenced by the works of Muslim astronomers such as Al-Biruni and Al-Battani. In addition, the contributions of Muslim philosophers, especially Ibn Rushd, played a very important role in the rise of scholastic philosophy in Europe. Ibn Rushd's philosophy on the relationship between reason and revelation, as well as his commentary on the works of Aristotle, was translated into Latin and used by European philosophers such as Thomas Aquinas in constructing scholastic philosophy. Ibn Rushd's thinking about knowledge and rationality became one of the triggers for intellectual debate in European universities, which later helped give birth to the Renaissance and the development of modern scientific thought.

In addition to philosophy, the works of Muslim scientists in the fields of mathematics, medicine, and astronomy also played a major role in the rise of Europe. The decimal and algebraic number systems developed by Al-Khawarizmi, for example, were adopted by European mathematicians and became the basis for the development of modern mathematics. Meanwhile, Ibn Sina's "Canon of Medicine" remained the main reference text in European universities until the 17th century, demonstrating the tremendous impact of the works of Muslim scientists on the development of science in the West²⁹.

The transformation of science during the Abbasid period shows the importance of cross-cultural knowledge transfer, especially through institutions such as Baitul Hikmah in Baghdad. The translation of scientific works from Greece, Persia, and India, as well as innovations by Muslim scientists such as Al-Khawarizmi, Ibn Sina, and Al-Biruni, created the foundation for the development of modern science. This intellectual center produced remarkable achievements in various disciplines and created a global legacy that influenced the intellectual revival in the West. The Islamic Golden Age is an example of how scientific innovation and intellectual openness can lead to globally impactful progress.

²⁹ Paul Lunde, "Science in al-Andalus - Cities of Light," Unity Productions Foundation, Inc., diakses 2 November 2024, <https://www.islamicpain.tv/the-science-and-culture-of-islamic-spain/science-in-al-andalus/>.

D. The Influence of Islamic Civilization on the Modern World

Islamic civilization, especially during the Classic and Golden Ages under the Abbasid Dynasty, not only developed in Islamic territory but also had a profound impact on the development of global civilization, especially in Europe. One of the most significant influences of Islamic civilization on the modern world was the role it played in triggering the Renaissance in Europe, a period of intellectual, artistic, and scientific revival that occurred in the 14th to 17th centuries. The works of Muslim scientists and philosophers were translated into Latin, and their thoughts became the basis for the development of science and philosophy in Europe. Without the contribution of Islamic civilization, the intellectual awakening that occurred in Europe would probably not have occurred as quickly or with the same intensity.

Translation and Knowledge Transfer Process

One of the main ways in which the legacy of Islamic civilization has contributed to the modern world has been through the translation of the works of Muslim scientists into Latin, which was then disseminated to Europe. This translation process mostly took place in Muslim Spain (Al-Andalus), especially in the city of Toledo, where Muslim, Christian, and Jewish scientists worked together to translate scientific and philosophical texts written in Arabic. The translated works cover a wide range of disciplines, such as mathematics, astronomy, medicine, and philosophy. Some of the important works translated into Latin are the medical texts of Ibn Sina (Avicenna), the mathematical works of Al-Khawarizmi, as well as the philosophical texts of Ibn Rushd (Averroes) and Al-Ghazali. This translation process gave European scholars access to the knowledge that had been developed by Muslim scientists. At that time, Europe was in a period known as the Dark Ages, in which much of the ancient Greek and Roman knowledge had been lost or forgotten. Through the translation of the works of Muslim scientists, Europe not only regained lost Greek and Roman knowledge but also benefited from innovations and developments carried out by Muslim scientists.

For example, Al-Khawarizmi's work on mathematics, particularly on algebra and the decimal number system, was translated into Latin and used by European mathematicians. The numeral system we use today, known as "Arabic numerals", was adopted from Al-Khawarizmi's work and is used all over the world. In the field of medicine, Ibn Sina's book "Canon of Medicine" has been a major reference in European universities for centuries. The book was translated into Latin and became the standard text in medical studies in Europe until the 17th century.

The Influence of Islamic Philosophical Thought on the Renaissance

In the field of philosophy, the influence of Islamic civilization on the modern world is enormous, especially through the works of Ibn Rushd (Averroes) and Al-Ghazali. Their works on the relationship between reason and revelation became the basis for the development of philosophy in Europe during the Renaissance. Ibn Rushd (1126–1198 M), known in the West as Averroes, was a Muslim philosopher and jurist who wrote important commentaries on Aristotle's works. His thoughts were very influential in introducing Aristotle's philosophy to Christian philosophers in Europe³⁰. One of the main concepts of Ibn Rushd is that reason and revelation do not contradict, but complement each other. He argued that the human intellect is capable of understanding truth through philosophy and

³⁰ Hasyim Asy'ari, "Renaissance Eropa dan Transmisi Keilmuan Islam ke Eropa," *JUSPI (Jurnal Sejarah Peradaban Islam)* 2, no. 1 (2018): 1–14, <https://doi.org/10.30829/j.v2i1.1792>.

science, while revelation also provides ethical and moral guidance. This view paved the way for intellectual debate in Europe, especially among scholastic philosophers such as Thomas Aquinas. Thomas Aquinas, a prominent theologian and philosopher in Europe in the 13th century, was greatly influenced by Ibn Rushd's thought. Aquinas tried to integrate Aristotle's philosophy with Christian theology, and the concept of reason developed by Ibn Rushd became an important cornerstone of his approach. Through Aquinas, the thought of Aristotle and Ibn Rushd became part of the curriculum in European universities, which later helped give birth to the Renaissance and intellectual revival in the West.

Al-Ghazali (1058–1111 M), a famous Islamic philosopher and theologian, also made a major contribution to the development of philosophy and thought in the Islamic world and Europe. His most famous work, "Tahafut al-Falasifah" (The Fall of Philosophy), criticized several aspects of Greek philosophy, particularly in terms of the relationship between reason and religion. Although Al-Ghazali's criticism of Greek philosophy differed from Ibn Rushd's approach, his work remained influential in shaping the intellectual debate among Muslim and Christian philosophers in Europe.

The Contribution of Islamic Science to Modern Science

Beyond philosophy, the legacy of Islamic science also has a great impact on the development of modern science. Muslim scientists not only maintain and translate knowledge from ancient civilizations but also innovate in various fields of science. For example, in the field of astronomy, the works of Muslim astronomers such as Al-Battani and Al-Biruni became the basis for the development of astronomy in Europe³¹.

Al-Battani (858–929 M) was one of the greatest Muslim astronomers of his time. His work on the motion of celestial bodies and the calculation of the length of the solar year was very accurate and was used by European astronomers such as Copernicus and Kepler in developing the heliocentric theory. Al-Biruni (973–1048 M) also played an important role in the development of astronomy and geography, with observations of the Earth's rotation and highly accurate measurements of the Earth's radius. In the field of medicine, the work of Ibn Sina and Al-Razi provides an important basis for the development of medical science in the modern world. Ibn Sina, with his work "The Canon of Medicine", introduced many medical concepts that are still relevant today, such as disease diagnosis and treatment based on clinical observation. Al-Razi (Rhazes), a Muslim physician and chemist, also made an important contribution by writing books on pharmacology and the diagnosis of diseases. His work was translated into Latin and used as a textbook in European universities for several centuries.

Social and Cultural Influence of Islam in Europe

In addition to its contributions in the fields of science and philosophy, Islamic civilization also exerted a wide influence in the social and cultural fields of Europe³². Al-Andalus (Muslim Spain) became the center of cultural meetings between the Islamic, Jewish, and Christian worlds. In cities such as Cordoba, Seville, and Granada, scholars from various backgrounds collaborate in translating scientific and philosophical works, as well as discussing various intellectual topics. This inclusive intellectual atmosphere creates a very rich transfer of knowledge and contributes to the development of culture and art in Europe.

³¹ Abid Nurhuda, "Peran Dan Kontribusi Islam Dalam Dunia Ilmu Pengetahuan," *JURNAL PEMIKIRAN ISLAM* 9, no. 2 (2022): 356–63, <https://doi.org/http://dx.doi.org/10.22373/jpi.v2i2.15909>.

³² Marni Basir dan Hasaruddin Hasaruddin, "Pengaruh Peradaban Islam Di Dunia Barat," *Edu Sociata : Jurnal Pendidikan Sosiologi* 6, no. 2 (2023): 935–41, <https://doi.org/https://doi.org/10.33627/es.v6i2>.

Islamic architecture also left a deep imprint on Europe. Majestic buildings such as the Alhambra Palace in Granada and the Cordoba Mosque became symbols of the influence of Islamic architecture adopted by European architects. The use of curves, mosaics, and complex geometric designs in Islamic architecture inspired the development of art and architecture in Europe during the Renaissance. The influence of Islamic civilization on the modern world, especially through the translation of the works of Muslim scientists and philosophers, cannot be ignored. The works of Muslim scientists played a key role in triggering an intellectual awakening in Europe, which came to be known as the Renaissance. In addition, their contributions in the fields of mathematics, medicine, astronomy, and philosophy became the foundation for the development of modern science. The intellectual legacy of Islamic civilization, especially from the Abbasid period, continues to have a profound influence on the way we understand science, culture, and philosophy to this day.

CONCLUSION

The transformation of Islamic civilization in the Classical and Golden Ages has made a great contribution to the development of world science and culture. This period was marked by outstanding achievements in the fields of politics, military, and science, which included mathematics, medicine, astronomy, philosophy, and more. Muslim scholars such as Al-Khawarizmi, Ibn Sina, and Al-Biruni made important breakthroughs that not only advanced Islamic civilization, but also influenced the development of modern science in Europe.

One of the greatest impacts of Islamic civilization on the modern world was its central role in triggering the Renaissance in Europe. Through the translation of the works of Muslim scientists into Latin, European scientists gained access to knowledge from the Islamic world, which in turn influenced the thinking and development of science in the West. The works of Ibn Rushd in philosophy and Ibn Sina in medicine, for example, became an important foundation for intellectual development in Europe.

The contributions of Muslim scientists are not limited to science, but also to the development of culture, art, and architecture. Islamic architecture left a deep imprint in Europe, while the intellectual interaction between the Islamic, Jewish, and Christian worlds in Al-Andalus created an atmosphere rich in knowledge exchange.

The intellectual legacy of Islamic civilization from the Classical period to the Golden Age continues to have a significant impact on the modern world, forming the foundation for the development of science and philosophy as we know it today. This legacy shows how cross-cultural knowledge transfer and intellectual collaboration can lead to globally impactful progress.

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