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From Arabic to Latin: Translation as a Bridge for the Transmission of Knowledge from Islamic Civilization to Western Europe.

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Abstract
As a result of the contact and interaction between the East and the West during the Middle Ages, a number of scholars became interested in studying Eastern languages, particularly Arabic, and translated numerous scientific works into Latin. Many translators gained prominence, such as Adelard of Bath from the city of Bath in England, who was regarded as a pioneer of Arabic studies in the Middle Ages and an important figure in the history of Western Europe. He was the first to insist on the necessity of relying on Arabic sources of knowledge, which were then known by their Latin designation "Arabum Studia". Another notable figure was Gerard of Cremona, who traveled to Toledo, mastered the Arabic language, and devoted himself to translating Arabic works, rendering into Latin more than seventy-eight treatises in philosophy, medicine, mathematics, and other fields. Likewise, Michael Scot, who spent his final years at the court of Frederick II, produced significant translations in natural philosophy and the sciences.
These translators moved to various Islamic regions, including al-Andalus and Sicily, accompanied the Crusader campaigns, and endured the hardships of travel, learning, and manuscript collection for the purpose of translation. They became deeply immersed in Arab culture and adopted the Arabic scientific method. Upon returning to their homelands, they served as ambassadors of knowledge in the West. Their translations contributed significantly to the scientific awakening of Europe, making them among the earliest Orientalists of the Middle Ages and some of the most important agents in the transmission of culture and knowledge between East and West.
For this reason, I have chosen this study to highlight the role of translation in the transfer of sciences and manuscripts from the Muslim world to Western Europe.

Introduction
The translation of Arabic works into Latin during the Middle Ages constituted one of the greatest cultural bridges through which science and knowledge were transmitted from Islamic civilization to Europe, During the period extending from the tenth to the thirteenth century CE, these texts covering fields such as philosophy, medicine, mathematics, and astronomy left a profound impact on the development of European thought. This translation movement emerged within a particular historical context, most notably the Crusades and the Christian expansion into al-Andalus and Sicily, which made encounters between cultures both inevitable and fruitful for the history of human thought.

Within this context, the present study seeks to address the following questions: What factors stimulated the translation of Arabic-Islamic works into Latin? And how did this movement overcome challenges related to the availability of support mechanisms and linguistic differences?

First: Translation in the Middle Ages: The Journey of Knowledge Between East and West

1.1 The Early Muslim Interest in Translation

Muslims established a major scientific and cultural renaissance and founded numerous libraries that supported and promoted the translation movement. The term "library" is the modern Arabic designation; in the past, a variety of names were used, such as (House of Wisdom), (Treasuries of Wisdom), (House of Wisdom), (House of Knowledge), and (House of Books). This diversity of terminology reflects the existence of different types of libraries throughout history, including palace libraries, private libraries, royal libraries, and the libraries of prominent families.[1]

The three greatest libraries in the Islamic world were: first, the library of the Abbasid Caliphs in Baghdad, known as the "House of Wisdom"; second, the library of the Fatimid Caliphs in Cairo, known as (House of Knowledge); and third, the library of the Umayyad Caliphs in al-Andalus. These libraries served as centers of cultural and scientific development. They were dedicated to collecting the intellectual heritage of previous nations and sponsoring the translation of Greek, Syriac, Persian, and Indian works in medicine, mathematics, physics, and astronomy from their original languages into Arabic.[2] Translation enabled Muslims to become acquainted with the sciences of earlier civilizations. They enriched this knowledge with their own commentaries and scientific experiences, thereby paving the way for original scholarship and remarkable scientific advancement across various disciplines. Had Muslims not devoted themselves to collecting, transmitting, translating, and explaining these works, much of this intellectual heritage would have been lost.

Historical sources mention that the Umayyad Caliph Mu'awiya (41–60 AH / 661–679 CE) was the first caliph to take an interest in establishing a library containing works from various fields of knowledge. He appointed individuals to manage it, preserve its collections, and safeguard its ancient manuscripts. Al-Mas'udi described this arrangement by stating: "Servants were assigned to it and entrusted with preserving and reading its contents."[3] When the Abbasids assumed the caliphate, the movements of translation and authorship flourished in Baghdad. The Abbasid caliphs showed great interest in the production of books and established the (House of Wisdom)[4] during the reign of Harun al-Rashid. The translation and

[1] Celeste Gianni, History of Libraries in the Islamic World: A Visual Guide. Gimiano Editore, 2016, p. 12.

[2] Boumediene Hicham Nemer, "The Movement of Translation and Transmission of Arabic Sciences in Christian Spain between the 10th and 12th Centuries (4th–7th AH / 10th–12th CE)." ʿUṣūr al-Jadīda, no. 23, 2016, p. 326.

[3] Saif Shahin Khalaf al-Marikhi, "The Book Trade among Muslim Arabs in the 3rd and 4th Hijri Centuries / 9th and 10th CE Centuries." Annals of Islamic History, vol. 5, Egypt Arab Publishing and Distribution House, Cairo, 2007, p. 4.

[4] "Bayt al-Hikma is considered the first public library that appeared in Islam, founded by Caliph Harun al-Rashid, who appointed officials to supervise it and provided it with the necessary books, so it flourished and became

scholarly movements reached their peak during the reign of al-Ma'mun, particularly after the introduction of papermaking to Baghdad, from where it spread throughout the Islamic world. It eventually reached al-Andalus and Sicily, both of which possessed some of the largest libraries of the time. These libraries played a major role in making Arabic works in various fields available and facilitating their subsequent translation by Europeans.

1.2 Gateways through Which the West Accessed Arabic Sciences

A. Al-Andalus

We have already referred to the Muslims' interest in translation in the Islamic East, which paved the way for a major intellectual awakening and opened the door to various branches of knowledge that reached their height during the Islamic period. This passion for learning was transmitted to al-Andalus, particularly during the rule of the Umayyad caliphs. Under their patronage, some of the largest libraries in history were established in Toledo, Seville, and Cordoba. These libraries were undoubtedly supplied with the scientific works either authored by Arab scholars or translated by them in both the eastern and western regions of the Islamic world. They were open to students and seekers of knowledge from all regions.

Numerous institutes and universities also emerged in al-Andalus, where philosophy, literature, history, and the various sciences were taught[5]. These institutions attracted European students eager to acquire knowledge. The universities of Toledo, Cordoba, and Seville were attended by large numbers of Christian students who studied there and absorbed their learning. Upon returning to their homelands, they transmitted the intellectual achievements of Muslim civilization to Europe.

In this context, the German Emperor Otto the Great sent an embassy to Abd al-Rahman al-Nasir in 935 CE, headed by John of Gorze, who remained in al-Andalus for three years. During this period, he learned Arabic and benefited from its sciences. When he returned to Germany, he carried with him a horse-load of Arabic books, most of which were scientific works.[6]

Thus began the dissemination of Islamic scientific works into Europe through students, and interest in translating Arabic texts into Latin steadily increased. European scholars sought to learn the Arabic language and devoted themselves to its study with remarkable enthusiasm. Perhaps the strongest evidence of this is the statement of the Andalusian priest Álvaro, who, objecting to the influence of Muslim rule, lamented: "Alas! The gifted young Christians of today know only the Arabic language and its literature. They devote themselves to learning it and spend great sums of money collecting its books."

The Library of Cordoba alone contained a vast collection of Islamic scientific works brought by the Umayyads from Baghdad. These works were accessible to scholars who frequented the royal court. The library reached its height during the reign of al-Hakam II al-Mustansir (350–366 AH / 961–976 CE), who devoted much of his life to collecting books. He commissioned

highly productive." See: Zakaria Hashim Zakaria, The Contribution of Arab and Islamic Civilization to the World, Dar Nahdat Misr for Printing and Publishing, Cairo, 1970, p. 282.

[5] Faraj, Izz al-Din. The Contribution of Muslim Scholars to European Civilization. Dar al-Fikr al-Arabi, 1972, p. 126.

[6] Al-Shafi'i Diab, Hamid. Books and Libraries in al-Andalus. Dar Quba for Printing, Publishing and Distribution, Cairo, 1998, p. 163.

agents in the East to purchase manuscripts on his behalf and incorporate them into his private collection at his residence (Dar al-Mulk). When al-Hakam ascended the throne, his personal collection was integrated into the royal library.[7]

The library of al-Hakam represented the last major example of a public library in al-Andalus containing a substantial proportion of the most important books written in the Islamic East. During the period of the Taifa kingdoms (423–479 AH / 1031–1086 CE), many of the books from this library were transferred to Toledo following the Great Fitna of Cordoba in the late fourth century AH / tenth century CE, in order to protect them from destruction or theft. After Toledo fell to the Christians in 478 AH / 1085 CE, they took possession of its books and manuscripts. Nevertheless, Toledo retained its scientific and intellectual prominence even after its conquest.

This library formed the foundation upon which the Archbishop of Toledo, Raymond, established the Toledo School of Translators (Colegio de Traductores Toledanos) in 520 AH / 1126 CE. He personally supervised the institution and attracted many of Europe's leading scholars and intellectuals to participate in the translation of Arabic scientific works in a wide variety of disciplines. He also invited scholars of different faiths to collaborate in the transfer and translation of books into Latin.[8]

It is certain that this library served as a source of manuscripts translated not only by Hugo de Santalla and Robert of Ketton (536–552 AH / 1141–1157 CE), but was also likely consulted by Peter Alfonsi of Huesca (454–494 AH / 1062–1100 CE), who collaborated with Adelard (494–546 AH / 1100–1150 CE) and provided him with Andalusian manuscripts, including al-Khwarizmi's astronomical tables in the revised version prepared by Maslama al-Majriti.

Regarding this matter, Haskins notes: "The process of translation was not confined to a single place; it was carried out in many locations, although its principal center was Toledo."[9] Similar developments occurred in other Andalusian cities, which gradually fragmented and declined. With the fall of Granada, the last stronghold of Muslim al-Andalus, one million Arabic books were burned in Granada, while three hundred medical manuscripts were transferred elsewhere. In this way, al-Andalus represented one of the most remarkable chapters in the intellectual history of medieval Europe.[10]

B. The Norman Kingdom of Sicily: A Meeting Point of Cultures in the middle Ages

Sicily occupied a prominent and distinctive position in the cultural history of the middle Ages. The Normans succeeded in uniting diverse peoples under their strong rule: Muslims in Sicily, Greeks in Calabria and Apulia, and Lombards in the principalities of southern Italy. Despite this diversity, the Norman rulers demonstrated remarkable foresight and tolerance, allowing each group to preserve its language, religion, and customs. At the same time, they drew from each community the individuals and institutions they considered most suitable for organizing

[7] Ángel González Palencia. History of Andalusian Thought, trans. Hussein Mu'nis, Library of Religious Culture, Cairo, 1955, p. 48.

[8] Mercedes García-Arenal. The Diaspora of al-Andalus: The Andalusians, trans. Muhammad Fikri Abd al-Sami', National Translation Project, Cairo, 2006, p. 46.

[9] Haskins, Charles Homer. Studies in the History of Medieval Science. Harvard University Press, London, 1924, p. 10.

[10] Al-Shafi'i Diab, Hamid. op. cit., p. 72.

and administering their government. Their rulers adopted a policy based on patronage of international talent.[11] Arabic continued to be widely used at the Sicilian court. King Roger II (525–549 AH / 1130–1154 CE) was well versed in Arab culture and pursued a policy of religious tolerance. His court hosted numerous Muslim scholars, including al-Sharif al-Idrisi (493–560 AH / 1099–1164 CE), whose diverse knowledge and important writings were highly valued. This reality was also observed by Ibn Jubayr [12]during his travels, as reflected in his description: "The conduct of this king is remarkable in its excellence and in his treatment of the Muslims... Among the most astonishing things reported about him is that he reads and writes Arabic. His royal motto, as one of his servants informed us, was: 'Praise be to God as He truly deserves to be praised.' His father's motto was: 'Praise be to God in gratitude for His blessings.'"

Foremost among the Western rulers who benefited from Arabic sciences in Sicily was Frederick II, the grandson of Roger II. He maintained close relations with some of the most distinguished scholars of Western Europe and brought them into his circle. He encouraged them to study numerous Arabic treasures and manuscripts and donated many works in philosophy, medicine, and other disciplines to the University of Bologna. Under the patronage of Frederick II, Islamic scientific works were transmitted to Europe. Translations from Arabic into Latin of both Greek and Arabic works were highly esteemed by northern European visitors, who came to Sicily in large numbers and became acquainted with Arabic sciences. As a result, many developed a desire to return home with samples of this Eastern knowledge, which was rapidly spreading throughout the lands beyond the Alps. This cultural exchange played a significant role in disseminating Eastern ideas throughout the West.[13]

From Sicily, this influence spread to Italy, Germany, and the region of Provence in southern France. The library of Frederick II was rich in Islamic books and manuscripts. Among the translators working under his patronage was Michael Scot, who, drawing upon Arabic sources, produced a Latin compendium of Aristotle's works as translated by Arab scholars, together with the commentaries of Ibn Sina (Avicenna)[14]. Also among the distinguished mathematicians at Frederick's court was the Italian Leonardo Fibonacci, who had studied in al-Andalus and the Islamic East. Another prominent figure was the Jewish scholar Faraj ibn Salim, known in the West as Faragut or Farragut, who translated al-Razi's "al-Hawi" and Ibn Jazla al-Baghdadi's "Taqwim al-Buldan"[15]. Thus, thanks to the policy of religious tolerance pursued by its rulers and their patronage of scholars, Sicily became an important center for the collection of valuable manuscripts and scholarly works[16]. The total number of volumes translated in Sicily is estimated at approximately three hundred.[17]

[11] Haskins, Charles Homer. The Normans in the European Century. London, 1927, p. 235.
[12] Ibn Jubayr. Rihlat Ibn Jubayr. Dar wa Maktabat al-Hilal, Beirut, p. 267.
[13] Haskins, Charles H. and Lockwood, Dean Putnam. "The Sicilian Translators of the Twelfth Century and the First Latin Version of Ptolemy's Almagest." Harvard Studies in Classical Philology, 1910, vol. 21, p. 2.
[14] Ibid., p. 3.
[15] Ahmad Aziz, History of Islamic Sicily, trans. Amin Tawfiq al-Taybi, Arab Book House, 1950, p. 101.
[16] Ibid., p. 102.
[17] Jurji Zaydan, History of Arabic Literature, Hindawi Foundation for Education and Culture, Cairo, 2012, p. 1342.

1.3 Western Interest in the Translation Movement from Arabic into Latin and Its Leading Figures

There were scattered attempts to translate Islamic scientific works before the great translation movement of the twelfth century. Several indications suggest that interest in translation had already begun in the ninth century with Gerbert of Aurillac (Gerbert Aurillac), later known as Pope Sylvester II. He was one of the most prominent intellectual figures of his age, regarded as the most learned man of his time and the first French pope. He also occupied a central place in the early intellectual revival of the Middle Ages.

Gerbert was born around 946 CE (335 AH) in what is now southern France. He received his education in monastic schools, where he gained a reputation for his mastery of logic and Latin literature, in addition to his strong interest in and passion for the sciences, particularly mathematics, astronomy, and logic. Driven by an intense thirst for knowledge, he traveled throughout Europe in search of learning, including a journey to al-Andalus between 967 and 970 CE (357–360 AH). There, he was able to study and examine the works of Muslim scholars, especially in the fields of mathematics and astronomy.[18]

In 999 CE (390 AH), he was elected Pope and adopted the name "Sylvester II". His papacy was characterized by efforts to reform the Church and improve the religious and intellectual climate in Europe. Among his most notable achievements was the promotion of the use of "Arabic numerals", including the concept of zero, in Europe. This represented a major advancement in mathematics, replacing the complex Roman numeral system. Pope Sylvester II was also renowned for his commitment to the transmission of knowledge, particularly from the Islamic world. He is associated with the introduction of certain scientific instruments, such as the "astrolabe". He died in 1003 CE (394 AH), but his intellectual legacy continued to influence European thought, especially in the fields of philosophy and science.[19]

By the middle of the tenth century and thereafter, diplomatic relations emerged between the "Umayyad Caliphate of Córdoba" and its Christian neighbors in Europe, opening a new era of political and cultural exchange. These relations increasingly acquired a cultural dimension. According to "al-Masʿudi", in 939 CE (328 AH), "Gotmar", Bishop of Girona, presented "al-Hakam II", the son of Caliph "Abd al-Rahman III", with a copy of the "History of the Kings of the Franks" during his diplomatic mission to Córdoba[20]. It is possible that Bishop Gotmar carried Arabic works back with him to Catalonia upon his return. These contacts between European bishops and Muslims played a significant role in the later transmission and translation of Islamic scientific works into Latin.

Likewise, Emperor "Otto I" sent "John of Gorze" to the court of the Umayyad Caliphate in Córdoba in 953 CE (342 AH), where he remained in Spain for three years. Additional evidence dating from the tenth and eleventh centuries further attests to this intellectual exchange. In the tenth century, a manuscript discovered in Lausanne contained two Latin treatises on the astrolabe that were undoubtedly derived from Arabic sources. Moreover, an

[18] Zuccato, Marco. "Gerbert of Aurillac and a Tenth-Century Jewish Channel for the Transmission of Arabic Science to the West." Speculum, 2005, vol. 80, no. 3, p. 745.
[19] S. Qandil, Samer. "Early Aspects of the." Journal of Medieval and Islamic History, 2019, vol. 12, no. 1, p. 24.
[20] Al-Masʿudi. Muruj al-Dhahab wa Maʿadin al-Jawhar. Al-Maktaba al-ʿAsriyya, 1st ed., Sidon, p. 28.

astrolabe was known to have existed in the Swiss city of Liège in 1025 CE, and two other works on the astrolabe, dating from 1048 CE, were attributed by the German scholar "Hermanus Contractus" to himself.

A major breakthrough in the translation movement came around 1070 CE through the efforts of "Constantine the African" (Constantinus Africanus), who translated medical works from Arabic into Latin. Among his most important translations was the "Liber Regius" (The Royal Book), derived from the medical writings of the Baghdadi physician "Ali ibn al-ʿAbbas al-Majusi".[21]

The Period of Flourishing Translation Activity

The translation movement flourished in Europe during the twelfth century. Among the prominent figures who distinguished themselves in this field was "Adelard of Bath", from the city of Bath in England. Adelard received his education in ecclesiastical schools, where he developed a strong interest in astronomy and embarked on a quest for knowledge. He traveled from France to the East during the period of the Crusades in search of learning. There, he succeeded in collecting numerous Arabic scientific works in the fields of natural sciences, astronomy, and mathematics. From the East, he moved to Sicily to further explore scientific expertise, and from Sicily he traveled to al-Andalus.[22]

Adelard returned to his homeland, England, a transformed man, driven by an intense thirst for knowledge and having found what he sought among the Arabs. Upon his return, he was appointed tutor to Prince Henry, who later became King Henry II. He became deeply versed in Arab culture and adopted the Arab approach to scientific inquiry and research. Adelard left behind numerous translations of Arabic manuscripts in astronomy and mathematics[23]. Among his most famous translations were "al-Khwarizmi's astronomical tables" and "Euclid's Elements". In collaboration with "John of Seville", he also translated four works by "Abu Maʿshar al-Balkhi". Furthermore, he wrote treatises on Arab sciences and on the astrolabe. In his work "Natural Questions", addressing his nephew, a graduate of the Frankish schools, he stated: "...My guide is reason, and I have learned from my Arab masters what is different from what you have learned..."

Among the most renowned translators who worked at the "Toledo School of Translators" was "Gerard of Cremona" (1114–1186 CE / 508–583 AH). He was born in the city of Cremona in the Italian region of Lombardy, studied philosophy, and later traveled to Toledo to learn the Arabic language.

Gerard devoted himself to translating Arabic works into Latin and translated more than eighty-seven works with the assistance of a team of collaborators. He worked alongside the Christian Arabist "Galippus", translating several books on medicine, philosophy, and astronomy from Arabic originals. Among these were "Aristotle's Physics" (De Auditu

[21] William Montgomery Watt, The Influence of Islam on Medieval Europe, trans. Sarah Ibrahim Al-Dhib, Joussour for Translation and Publishing, 1st ed., Beirut, 2012, p. 11.

[22] Aisha Abdullah Al-Owais and Khair El-Din Youssef Shatra. "Pioneers of the Translation Movement in the Twelfth Century: Adelard of Bath as a Model." University of Sharjah Journal for Humanities & Social Sciences, 2022, vol. 19, no. 2, p. 337.

[23] Jonathan Lyons, The House of Wisdom: How the Arabs Transformed Western Civilization, Arab Scientific Publishers, p. 25.

Naturali), "Ibn Sina's Canon of Medicine" (Liber Canonis Primus quem Princeps), which was the most comprehensive and influential medical work among the Arabs,
"al-Mansuri" by "Abu Bakr al-Razi", "A Treatise on Smallpox and Measles" by al-Razi, and the surgical section of "al-Tasrif li-man ʿAjiza ʿan al-Taʾlif" by "Abu al-Qasim al-Zahrawi", in addition to many other scientific works.[24]

Among the prominent translators of this period was also "Michael Scot", who began his translation activity in the early thirteenth century. By then, the movement of translating Arabic works into Latin had already extended for more than a century and a half. Michael Scot joined the Toledo School of Translators and translated "Abu Ishaq al-Bitruji's" "Book of Astronomy" in 1217 CE (614 AH), a work in astronomy that caused a major scientific impact within European intellectual circles during the Middle Ages.

During 1220–1221 CE (617–618 AH), Michael Scot reappeared in Bologna, where he seems to have been engaged in medical studies. A few years later, between 1227 CE (625 AH) and 1230 CE (628 AH), Scot moved to Italy. During this period, he attracted the attention of Emperor "Frederick II" in Sicily and spent his final years at Frederick's court. There, he translated numerous works into Latin, including a Latin version of part of "Ibn Sina's "Book of Healing, which he dedicated to Frederick in 1232 CE at the Sicilian court.[25]

Michael Scot also translated the Arabic version of Aristotle's works, as well as "Averroes' (Ibn Rushd's) major commentaries" on Aristotle's "On the Heavens" ("De Caelo"). He further authored several works, most notably a trilogy of introductory booklets on natural philosophy known as "Liber Introductorius", "Liber Particularis", and "Physionomia". These works were intended for beginners and covered a wide range of disciplines, including astrology, geography, climatology, medicine, music, anatomy, physiology, and more.

Other works were also attributed to Michael Scot, such as a commentary on "Sphaera" (an important Latin astronomical text), as well as various writings in natural philosophy and a collection of chemical and magical works. Whether authentic or not, these attributions contributed to establishing his reputation as a magician and alchemist ("Ars alchemiae, Lumen luminum, Geomantia, Experimenta necromantica").

The influence of Michael Scot's translations, like those of other medieval translators, was highly significant. The vast body of Greek and Arabic Aristotelian works made available to Latin thinkers brought about a revolution in education and in various forms of systematic thought.[26]

Second: The Challenges Posed by Translation from Arabic into Latin and the Means of Support

Translators focused particularly on philosophy and the sciences texts intended to provide the Latin world with tools for advancing Western cultural development. This, however, posed challenges for translators, especially in terms of selecting appropriate texts for translation and securing adequate financial support for their projects.

A. Selection of Texts for Translation and Means of Support

[24] Haskins, Charles H. and Lockwood, Dean Putnam. op. cit., pp. 7–8.
[25] Burman, Thomas E. "Michael Scot and the Translators." The Literature of Al-Andalus, vol. 5, 2000, p. 404.
[26] Burman, Thomas. op. cit., pp. 405–406.

It is noted that the initial transmission of Arabic scientific works in the tenth century did not mark the beginning of a continuous translation movement, as this activity was interrupted for a period during the eleventh century. This interruption can be explained by the fact that most translation efforts were carried out by church clerics who lacked the institutional infrastructure or financial support necessary to sustain such activity. Moreover, the subjects of translation were largely limited to fields aligned with their scientific interests, particularly astronomy and the astrolabe.[27]

However, after the fall of Toledo and the seizure of its library, translation activity flourished. The translations produced in Spain during the twelfth century relied on the Arabic works that had become available there, and thus translators had access to libraries that provided them with the essential source material required for their work.

Furthermore, with the establishment of the Toledo School of Translators, translators received financial patronage that enabled them to meet their basic living needs. In Sicily as well, the Norman court provided special patronage to translators working under King Roger II. Alfonso X, King of Castile (1252–1284), also acted as a patron for a large number of translators, who sometimes worked in teams. Translation activity expanded into broader fields, including religious works, although despite this diversity, projects remained primarily focused on scientific texts, as had been the case in the twelfth century.[28]

The situation at the court of Frederick II was very similar to that of Alfonso X. The emperor himself had a genuine interest in natural philosophy, and the Jewish scholars in his entourage studied Aristotle's works, Averroes' commentaries, and the "Almagest". Many scholars at his court also produced original scientific works, such as Michael Scot and al-Sharif al-Idrisi.[29]

This patronage and support granted to translators resulted in important works that demonstrate the greatness of this era. Translators in the twelfth century contributed significantly to the transmission and expansion of Eastern knowledge into the Western world. Their work was not limited to translating scientific texts; they also helped integrate diverse philosophical and intellectual traditions into Western culture. Translators played a central role in bridging the gap between classical Greek philosophy, Islamic knowledge, and Christian Western thought.

Although Western civilization in the Middle Ages and beyond was largely built upon these indispensable translations such as translations of Aristotle's logic, the "Almagest", the commentaries of Ibn Rushd (Averroes), and Ibn Sina's "Canon of Medicine" translators were rarely granted recognition and were treated as anonymous transmitters of knowledge, with their names barely attracting attention.

This modern neglect of translators stems from contemporary notions of creativity, which regard translation as a passive and mechanical act. However, the translations produced by these scholars were active and significant works. The entire translation process—from the selection of texts to the production of the final version—required substantial initiative and intellectual effort from the translators. Failing to acknowledge this means overlooking the

[27]SAMSÓ, Julio. Al-Andalus, a bridge between Arabic and European science. Alhadra I, 2015, p. 106.
[28] Burman, Thomas. op. cit., p. 405.
[29] Haskins, Charles H. and Lockwood, Dean Putnam. op. cit., p. 2.

vital role they played in transmitting Arabic sciences to medieval Europe, which later laid the foundations of the Renaissance.

The individual effort of these translators is clearly evident in their willingness, as previously noted, to travel long distances in search of Arabic scientific works and to endure the difficulty of learning the Arabic language. The selection of texts for translation was itself a highly creative task. In some cases, patrons played a role in determining which works were translated; however, since most patrons did not know Arabic or have detailed knowledge of the available texts, translators themselves exercised a considerable degree of freedom and creativity in this process.[30]

B. Translation Techniques

Creativity among translators was not limited to the selection of texts; it also extended to the translation process itself. Recent studies, such as those by Charles Burnett, show that scientific translation methods ranged from strict literal translation to more flexible adaptation aimed at conveying meaning without deviating from the original texts.

Certain developments in the Arabic–Latin translation of scientific works formed the background for debates on the techniques adopted by these translators. Among these developments was a growing tendency toward literal translation (verbum de verbo), and a decline in the earlier practice of obscuring the Arabic origin of texts or giving them a Hellenized form, as early translators had done

The gradual adoption of the Boethian model of literal translation was accompanied by a stronger commitment to the original Arabic texts, which led to the gradual disappearance of Greek-style versions.[31]

It is clear that the turning point in both of these developments came with the Spanish translators of the twelfth century. During this period, “John of Seville” (in the 1120s and 1130s) and the Toledo translators such as “Dominicus Gundissalinus” and “Gerard of Cremona” began to adopt a strictly literal method of translation that did not conceal the Arabic origin of the texts.

In contrast, the translations of earlier eleventh-century translators were not literal. They often summarized passages that seemed excessively long, omitted repetitions, and frequently altered book titles. For example, what was known in Arabic as “Kitab Kamil al-Sinaʿa al-Tibbiyya” by “Ali ibn al-ʿAbbas al-Majusi” was given a Hellenized title, “Pantegni Constantini” (or alternatively “Pantegni translatus a Constantino” or “editus a Constantino”). One of the most prominent figures of this approach was “Constantine the African.[32]

“Herman of Carinthia” translated into a refined Latin style influenced by the classical tradition, with a tendency to use borrowed Greek terms. He justified his translation method in the introduction to his Latin translation of “Abu Maʿshar’s “Great Introduction to Astrology”, where he addresses his fellow translator “Robert of Ketton”, saying: “I have experienced how

[30] Burman, Thomas. op. cit., pp. 405–406.

[31] HASSE, Dag Nikolaus. Abbreviation in Medieval Latin Translations from Arabic. In: Vehicles of Transmission, Translation, and Transformation in Medieval Textual Culture, 2011, pp. 160..

[32] HASSE, Dag Nikolaus.op,cit,, pp. 160–161.

difficult it is to render into Latin, from that abundance of expression characteristic of the Arabs especially in these subjects (namely astronomy), which require precise representation of content anything that fits the Latin language."

According to Herman, Robert advised him to move away from the Boethian ideal of literal translation in order to avoid the verbosity of Arabic texts. Herman followed this advice, and his translation of Abu Maʿshar's work was approximately half the length of the strictly literal translation produced by "John of Seville", which had been completed only a few years earlier.[33]

Translation from Arabic into Latin faced the challenge of clarifying logical sequence, but this was not an insurmountable obstacle. Translators also copied illustrations from Arabic manuscripts and translated their accompanying captions into Latin.[34]

In conclusion, it can be said that the translation process faced numerous challenges, particularly in transferring and rendering texts, which often resulted in the loss of their original elegance and fluency. Centuries earlier, "al-Jahiz", in his book "Kitab al-Hayawan", written during the flourishing of translation in the Abbasid era, had already stated:

> "The translator can never fully convey what the wise man has said, in all its meanings, its nuances, its brevity, and its hidden dimensions… How can he possibly deliver it truthfully and completely, unless he is as knowledgeable in its meanings and linguistic forms as the author himself? … How could Ibn al-Bitriq, Ibn Naʿima, Ibn Qurra, Ibn Wahilya, or Ibn al-Muqaffaʿ be like Aristotle? And how could Khalid be like Plato?"

Al-Jahiz's conclusion is that the translator cannot fully render the work of any of these scholars in its entirety.[35]

Conclusion

In conclusion, it can be stated that the translation process had already undergone a long development before crystallizing into an organized and independent activity, a development that would not have been possible without the direct contact between East and West. This interaction generated curiosity about the Other, influenced by it, and a desire to draw upon its sciences. As previously noted, this process began through individual initiatives and later evolved into organized efforts that provided the necessary patronage to accomplish this task.

This process also faced numerous challenges, particularly in the selection and translation of texts, through which the original beauty and fluency of the works were often lost. Writing the history of such a complex phenomenon, which is linked to many other academic disciplines, is a difficult task. Nevertheless, it remains an important one that requires the coordination of efforts and further scholarly research.

[33] Ibid., p. 163.

[34] BURNETT, Charles. Manuscripts of Latin Translations of Scientific Texts from Arabic. In: Proceedings of the Lawrence J. Schoenberg Symposium on Manuscript Studies in the Digital Age, 2009, p. 6.

[35] al-Jāḥiẓ, *Kitāb al-Ḥayawān*, taḥqīq ʿAbd al-Salām Muḥammad Hārūn, 2nd ed., Muṣṭafā al-Bābī al-Ḥalabī, Miṣr, 1965,p75-76.