



The contribution of translation movement in the development of sciences

MOKADDEM Mokhtaria

University of Mustapha Stambouli- Mascara (Algeria)

ORCID iD: 0009-0001-4220-818X

mokhtaria.mokaddem@univ-mascara.dz

Abstract:

In the first Hijri century, Muslims figured out fragments from the Greek heritage. A new impetus was given to the translation movement thanks to the enlightened patronage of three of the early Abbasid Caliphs in Baghdad, Al-Mansur (754-775 A.D), Harun (789-809A.D), and his son Al-Mamun (813-833A.D). They were able to bring the manuscripts directly from Byzantium (Constantinople).The caliphs seek to obtain the original ones in which remuneration of the translators at the time were gold. The sources of Greek sciences were being hidden by the Byzantium so that Muslims cannot reach them in their period of prosperity.

Kay words: Translation; Translation Movement; Science; Knowledge; Scientific.

La contribution du mouvement de traduction au développement des sciences

Résumé :

Au cours du premier siècle de l'Hégire, les musulmans ont découvert des fragments de l'héritage grec. Un nouvel élan a été donné au mouvement de traduction grâce au patronage éclairé de trois des premiers califes abbassides de Bagdad, Al-Mansur (754-775 ap. J.-C.), Harun (789-809 ap. J.-C.) et son fils

Al-Mamun (813-833 ap. J.-C.). Les califes cherchaient à obtenir les manuscrits originaux pour lesquels la rémunération des traducteurs de l'époque était en or. Les sources des sciences grecques étaient cachées par Byzance afin que les musulmans ne puissent pas les atteindre pendant leur période de prospérité.

Mots clés : *Traduction ; Mouvement de traduction ; Science ; Connaissance ; Scientifique.*



Introduction

Carrying out a research about the impact of translation movement in the progression of sciences is considered as scientific journey that requires not only diversified abundant data but also intellectual and systematic efforts to classify the fields of knowledge and tracing the contributions of all scholars in the different scientific specialties such as natural sciences, social and human sciences. In such levels of research, Time, Efforts and giving oneself to conduct an original study for the medium and long term are required. It is a challenging project that will be occurred as long as the scientific, the practical frames and conditions are available.

The Current research paper is an impressionistic attempt that will be followed by other multi-directional critical attempts to introduce samples from Islamic thought that had a great influence on the movement of scientific methodology and that Islamic thought left its mark in different domains after being opened to Greek, Persian and Indian thought.

Broadly speaking, this study sought to investigate first of all the features of scientific thought among Muslims. Then, it takes the translation movement in the history of Islamic thought. It explores also the contributions of Islamic thinkers in the field of mathematics besides to the first thresholds of the so-called today "Comparative Approach". Finally, it looks to present models of works of Muslim thinkers and their influence on the movement of the scientific thinking in the Renaissance.

1. Features of Scientific Thinking among Muslims:

Before talking about the main features of the scientific thinking among Muslims, it should be noted that they did not started out of vacuum, but rather benefited from the works of the other civilization's thinkers. In this context Ali Sami Al Nachar pointed out :

“ the history of science of Arabs begins with the migration of the Greek Alexandrian library to Baghdad, then followed by another scientific migration from foreign countries, ancient Persia, holding science of Iran to the Arab world . The third one came from India and Sindh loaded with Indians' views in medicine, astronomy, and mathematics. ”

(Sami, 1984, p. 330)

It is worth noting that Arab civilization benefited from other civilizations by translating its science into Arabic;

“ the role of Arabs went beyond transferring knowledge from and into the world civilizations that has existed before. Arab was not satisfied with what they acquired, but rather they investigated, innovated and added value to science and its method.” **(Bssat,**

1982, p.60)

If we trace back the contribution and influence of Arab civilization, we find that Arabs took from the works of Greek philosophers and introduced their scientific perspectives while conducting a research phenomenon. Abd Al Bassat Mohamed Hassan noted:“ it was natural for the Arabs to benefit from the Greek approach in study and research. Arabs' attitude toward this approach varies in which they opposed the measuring methodology and went beyond observation and experiment as Ibn Khaldoun claimed:“ syllogism is a mental one and the external assets are diagnosed, in which the match between them is



Soumission : 02/03/2025 Acceptation : 04/06/2025 Publication : 15/07/2025

uncertain because the substance prevents it." and the external existences are diagonized so the correspondence among them is not certain because the stance prevents this certainty." (Bssat, 1982,p. 60)

The Arabs were interested in the inductive approach; they resorted to observation and experiment to collect scientific data. They adopt scientific tools in mesearing to obtain new results. They mastered a lot of sciences like:

astronomy, natural science, chemistry and medicine.

Great names appeared to be pioneer in these domains such as: Al Biruni, Al Hassan Ibn Haythem, Djabir Bn Hayan, Abou Bakr Al Raazi, and Inb Sina who adopted the inductive approach. " (Bssat, 1982,p. 60)

Hassan Ibn Haythem has determined the principles of inductive method rigorously saying :'' the research start by inducting the existing things, examining the state of visible assets, and distinguishing the properties of the particulars '' (Bssat, 1982, p. 61) for that sake :'' he calls , to start with study of particular facts, and using scientific observation study the facts to pave the way to discover their properties, knowing their characteristics and arriving at the laws that govern them.'' (Bssat, 1982, p. 61)

Based on what we have seen it appears that:'' Arabs had a great contribution in establishing the foundations of scientific research and determination of the inductive method rigorously. They did not settle for what they found but also used them in their studies and researches where they have reached many important scientific results.'' (Bssat, 1982, p. 61)

Apparently, Islamic thought has benefited from the other civilizations like Greek, Persian and Indian, as they set out

from what they reached. The rational and moderate view of Islam helped them to provide many scientific, cognitive and methodological values that characterized the history of science. It was considered as an important basis to establish the rules of the scientific method. In addition, they tend to translate, generalize knowledge and raise people awareness to acquire knowledge. This golden Era of translation, known as the "Golden Age", under early Abbasid rule is considered as the peak of this movement.

2. Translation Movement and Islamic Thought:

The problematic being arose was that how did they handle to understand the different languages of the pre-eminent civilization in the field of knowledge in general and scientific research in specific especially the Greek civilization. In this context, Abou Rayan claimed that:

" The Arabs have not known the Greek language so they sought help from surrealist* in transferring the Greek heritage, it is known that this movement was preceded by another movement of translation from Greek to Surrealism." (Ali, 1976, p. 87)

2.1. The Translation Movement during Umayyad Ruling Era (661- about 750 A.D.):

The translation process in the Umayyad period, lasted about 60 years is considered as the first stage of the whole Arab translation movement from Surrealism into Arabic. The translation movement in this era was limited and the amount of translated works was limited in number because of the governance stuffs. Knowing that this period was characterized by two cultural movements which are respectively: the support of translation process by The Prince Khalid ibn Yazid who was one of the translation



Soumission : 02/03/2025 Acceptation : 04/06/2025 Publication : 15/07/2025

supporters, and the movement of authorship in the Islamic and Arabic sciences. (Ali, 1976, p. 89)

2.2 The Translation Movement during Abbasid Ruling Era (661-1274 A.D):

“ In reality, the Abbasid Caliph had a new different vision that the Islamic nation had not known before in which they were keen on acquiring knowledge of various domains and searching.” (Sliman, 1995, p. 89)

In general, the translation movement in the Abbasid Age took place through different stages which are as follow:

- **The First Period** (136-198 H) “ from the reign of Caliph Al Mansour to the death of Al Rachid. The major translators who flourished during this period include Yahana Ibn Al-Bitriq, Abdullah Ibn Al-Muqaffa and Yahana Masawayh.” (Ali, 1976, p. 89)

In this period, the main books of Aristotle have been translated along with their Scandinavian interpretations, besides to the translation of some of Plato's books and the main writings of Jalinous in the field of medicine. (Sliman, 1995, p. 23) Yanana IBN AL-BITriq was credited with translating into Arabic the book of Euclid in geometry and Plato's Timaeus. Ibn Al-Muqaffa translated Kalilah wa Dimnah from Sanskrit, the ancient Indian language, into Arabic. . It was mentioned that he translated also Aristotle's books of logic into Arabic like the book of “The Categories”, “ The Expression”, “First Analytics”, “Second Analytics” and the book of Isagoge written by Porphyry (Ali, 1976, p. 90). Yahana Ibn Maswaih, was in charge of transferring the ancient medical books as being found in Amouriya and

other places in the Moman country being conquered by Muslims (Ali, 1976, p. 92).

- **The Second Period (198-300 AH):** the era of Caliph Al-Ma'moun that featured a dynamic progression in translation movement and massive development in the field scientific research. As a matter of fact, many translators translated numerous books in all sciences, in ethics, philosophy besides to chemistry and medicine (Ali, 1976, p. 93).

It is also relevant to mention that this era knew a blockbuster to translation because the latter was under the patronage and sponsor of the Caliph in which " " he devoted himself to knowledge wherever is thanks to his noble endeavor, he sent Rome's kings to ask about philosophers' books where they provided him with all what they had such as books of Plato, Aristotle, Hippocratic and others that have been translated by professional translators. He also impelled people to read and teach this knowledge as well" (Ali, 1976, p. 94).

- **The Third Period (300- 350 AH):** it lasted about half a century. The best known translator of this period Abou Al Bachir Mattā Ibn Yūnus who had a school in Baghdad in the reign of Al Radi in 320H. The major works went to the books of Aristotle of logic and nature along with their explanations done by Yuhanna the grammarian and others" (Ali, 1976, p. 102).

Other translators were Abou Otman Al Dimachki who translated books of logic and goemetry, and Abou Issa Bn Isaak Bn Zaraa one of the pionner in logic and philosophy (Ali, 1976, p. 103).

In nutshall, the great interest toward Greek philosopher and their wittings led to the early entrance of the aristotle's logic in the Islamic world through translation.



Soumission : 02/03/2025 Acceptation : 04/06/2025 Publication : 15/07/2025

The period of Abbasid was considered as the Golden Age full of prosperity. The Rulers took a great care of science and knowledge and under their support the scholars contributed in the building of world civilization. In this period, philosophical and scientific movement developed and paved its way to the Golden Age of Islam (**Sliman, 1995, p. 22**).

To conclude, the translation movement, During the Ruling of the Rightly Guided Caliphs (Al Khulafa ar Rashidun), was considered as the golden age, including the motivations of Caliphs and various patrons in which the remuneration paid to translators was quite probably the highest that such professionals have ever received, and the material underpinnings of the endeavour. Delisle and Woods worth told us that: "there was intense translation activity in the Abbasid period (750-1250), centered on the translation into Arabic of Greek scientific and philosophical material, often with Syriac as an intermediary language" (**Delisle, 1995, p. 112**).

They encouraged the spread of knowledge and the recognition of different sciences. It was really a prosperous era that introduced the contributions of Muslims in different domains like mathematics and research approaches.

3. Muslims' contribution to mathematics:

It is said that Greek mathematics and Indian counting received a great interest. The main domains that the Arabs have experienced can be outlined in the following points:

- The Arabs translated the book of Euclid's Elements, it is often known as "Elements" and Fithagoras School. Al Farabi in his book Science's Statistic:" the book related to Euclid-Fithagoras includes geometry and numbers, it is known as

Elements. Two ways can be viewed; the analysis and the composition. The ancient scholars combined both methods in their works, yet Euclid organized his book using the composition method only" (Delisle, 1995, p. 112). It is cleared from the last expression that Al-Farabi distinguished between what we called Platonian Pythagorean School and Aristotelian Euclidian school of logic. " Almost philosophers (Al-Kinidi, Al-Farabi and Ibn Sina) followed the Aristotle Euclid tradition, meanwhile; Ikhwān al-Ṣafā' adopted the Pythagorean method and were interested in the properties of numbers and shapes adding to its magical formula. They mainly influenced by the late Pythagorean school" (Abed, 1994, p. 63).

- Another remark should be mentioned ; " Arabs did not adopt the Greek conceptualization of mathematical substances as they did not considered it as an independent mental significance that is extracted from abstraction and generalization, as a matter of fact, they did not find evidences that show its concreteness like the Greek did. They were familiar with the tangible property of numbers and shapes " (Abed, 1994, p. 63). It is clear from the previous quote that the Arabs philosophers considered the mathematical subjects as metaphysical rather than being independent fixed ones unlike the Greek. Arabs appreciated certainty and rationality in mathematics and not its metaphysical aspect. Al- Ghazali appreciated this aspect of mathematics as he said;" mathematics is without any doubt certain unlike philosophy" (Abed, 1994, p. 64).

- Ikhwān al-Ṣafā' (Brethren of Purity) had special perspective about maths, they followed Pythagoras and Plato' opinions, they were interested in the properties of numbers and shapes apparently began with the Pythagorean



Soumission : 02/03/2025 Acceptation : 04/06/2025 Publication : 15/07/2025

school as being independent and devine creation. They created a kind of symmetrical and parallelism between natural assets and mathematical substances'' (**Abed, 1994, p. 64**).

Ikhwān al-Şafā' indicated in the introduction of their first letter that they did as the Pythagorean scholars did ;' mixture of Pythagorean philosophy, other elements taken from the modern Platonian school and Islam doctrines tends to appear in the works of Ikhwān al-Şafā' .Consequently their letters cannot be distinguished as being original or created'' (**Abed, 1994, p. 65**).

- The Islamic history marked an original and creative works in the field of mathematics'' like Al-Khwārizmī, Al-Tabani, Thabet Bn Koorā, Mohamed Al-Khazin, Ibn Al-Haythem, Omar Al-Kayyam, Ibn Al-Banaa and other mathematicians, astronomers and physicians whose contributions should be recognized all over the world especially in Europe in Renaissance era (**Abed, 1994, p. 65**).

The most important contribution varied so that they recognized the Indian counting and Greek mathematics, they used them as step to develop mathematics. Muhammad ibn Mūsā al-Khwārizmī He who popularized a number of mathematical concepts namely ''Algorithm'' which derived from his name ''Al-Khwārizmī''.

The book of al-khawarizmi has a lot of influence in Europe. Will Durant said; ''This work, now lost in its Arabic form was translated by Gerard of Cremona in the twelfth century, was used as a principal text in European Universities until the sixteenth century and introduced to the west the word algebra (al-Jabr ''restitution,'')

“completion)” (Will, 1985, p. 241). It is clear that the Arabs’ works influenced thinkers of the other societies.

Al-Khwārizmī wrote a treatise entitled *Kitab aljabr wa’l-muqabalah*. The treatise actually had a very practical reason behind: “the words al-jabr and al-muqabalah were operations used by Al-Khwārizmī. Al-jabr means something like “restoration” or “completion,” and was the operation used to add equal terms to both sides of an equation to get rid of a negative term” (Abed, 1994, p. 65).

- Additionally, Muslims made the use of Arabic numbers popular, introduced the number zero was especially important for mathematics and got the solution of many algebraic equations” (Abed, 1994, p.66).

Muslims contributions were moved out to Europe in the thirteenth century by the Italian Leonard Fibonacci. It was until the sixteenth century that Al-jabr has been considered as an academic science based on symbols thanks to Fiit and Descartes” (Abed, 1994, p. 66).

So the Muslim thinkers had a big and lasting influence on the world of mathematics besides to the contributions of Europeans who developed it starting from the works of Al-Khwārizmī and others who lightened mathematics along with its branches Al-jabr and geometry. That is the interactive cumulative characteristic of science. It is also worth noting that the contributions of Islamic thinkers have gone beyond the cognitive and the methodological aspect. The best example is first sign of the comparative method in Islamic thought.

4. The Beginnings of Comparative in the Islamic Thought:

Talking about comparison as an approach withing the scope of Islamic thought led to the works of Al Bayrouni



Soumission : 02/03/2025 Acceptation : 04/06/2025 Publication : 15/07/2025

who is considered as a scholar and a comparative methodologist who compared all Indian sciences that he had almost a complete knowledge about (medicine, astronomy and mathematics) along with Greek heritage, and compared all of them with what the Muslims had. He reached the following results (**Sami, 1984, p. 203**): the Indians had a large partial science that was advanced, but it was not systematic (scattered researches in medicine, mathematics, astronomy and physics. In contrast, the Greeks had a reasoning theory.

These important results reached by Al- Bayrouni had a great impact on the development of Islam science, and his inductive method had a great merit in the history of science in general. Scholars applied the experimental inductive method to Indians and Greeks' sciences'' (**Sami, 1984, p. 203**). Al- Biruni's mastery of the Indian and Greek intellectual heritage, his reliance on precise observations, and his intelligent comparisons made him distinguished in his thought and in his research method as a result he established what could be called the "Comparative Approach".

Such works introduced by Islamic scholars like Al-Khwārizmī, Al-Biruni, Ibn Haytham, Ibn Sina and others had a great impact on the works of western scholars in the Renaissance, where they started from the point where the Islamic thinkers ended up.

5. The influence of some works of Muslim thinkers on the scientific thought movement in the Renaissance era:

The contributions of Islamic thinkers had a great role on the movement of scientific research both in expanding knowledge and developing approaches and techniques of

research; “ the rise of Renaissance came after the their exposure to the Arabs’ scientific and intellectual heritage in which they felt paralyzed and astonished in front of the flow of the Arabs thought” (Sami, 1984, p. 61).

To an extent, Renaissance’ scholars influenced by the effective contributions of Arabs in the development of scientific research in which ;’’ Abi Bakr Al-Razii, Djabir Bn Hayan, Al-Hassan Bn Haytham, Ibn Sinaa and others had a reat role in defining the inductive method accurately and framing the rules of scientific research based on observation and experimentation. Then, the European followed this method in the upcoming ages; modern and contemporary’’ (Sami, 1984, p. 69).

Based on what is mentioned in the two last elements, it becomes clear that it is really a process of influence and being influenced concerning the scientific research foundations between different civilizations in one hand, and the Arab Islamic civilization and the other ones in the other hand. This process was manifested through the movement of translation from Arabic and foreign sources in different domains.

Conclusion:

To sum up, the Islamic thought went through three main stages; the stage of the beginnings or the creation opened to the works of other civilizations (Greek, Persian and Indian) Then, the second stage, it relied on the translation movement that is extended from 163to 350 AH. In this period, thinkers and intellectuals translated sciences of the other civilizations under the patronage of the rulers who provided the



Soumission : 02/03/2025 Acceptation : 04/06/2025 Publication : 15/07/2025

translators with great remunerations. The last one is a period of cognitive and methodological creativity of Muslim thinkers so their works went beyond the limit.

Interactive cumulative characteristic of knowledge has been appeared clearly in the Islamic civilization where they established their sciences as well as taking from the other civilizations; as we cannot start any research out of vacuum. Albert Einstein once said that he would not have done if it was not for the works of thinkers who came before him like: Ghalilio, Isaac Newton and others.

Bibliography:

- 1) Abed, A.-D. M. (1994). *An introduction t philosophy of science, the contemporary rationality and the development of scientific thought*. lebanon: Center of unified arabic studies.
- 2) Ali, A. A.-R. (1976). *the history of philosophical thought in islam*. cairo.
- 3) Bssat, M. H.-A. (1982). *The rules of social research*. cairo: Wahba Library.
- 4) Delisle, J. W. (1995). *tRANSLATORS Through history*. amsterdam: pa: john Benjamins.
- 5) Sami, A.-N. A. (1984). *Research approaches of the islamic thinkers and the creation of the scientific method in the islamic world*. lebanon: Dar Al-Nahda Al aRABIA.
- 6) Sliman, A. H. (1995). *The relationship between theology and philosophy in islamic thought*. cairo: Dar Al-Maarifa.
- 7) Will, D. (1985). *The Ages of faith*. new york.