

Literatures and languages Journal Abou bekr belkaid tlemcen university ISSN : 2676-1963/ EISSN: 2676-167X https://www.asjp.cerist.dz/en/PresentationRevue/416



Major Historical Translation Movements in the Arab World and the Contribution of Translation in Knowledge Transfer

Dr SELOUGHA Fayrouz^{*}, ECOLE SUPERIEURE DE COMMERCE, Algeria. <u>f_selougha@esc-alger.dz</u>

Article history

Received : 22-12-2021

Accepted : 31-12-2021

Published : 15-05-2022

Abstract

Keywords Cross-cultural communication Umayyad period Abbassid dynasty Toledo School Calquing knowledge transfer target context Translation has always been primordial for cross cultural communication between nations. It has contributed in the creation of a better understanding between communities by building a bridge through which civilizations, knowledge, beliefs and convictions are transmitted. In this context, the present paper is divided into four parts.

The first describes the major historical stages that translation went through in the Arab world starting from the Islamic era including Umayyad period, Abbassid dynasty, going through the school of Toledo.The second part identifies how the efforts of Arab translators contributed to the growth of the translation movement in Europe particularly in the Middle Ages, namely with the advent of calquing. This period was characterized by a flood of translated works mainly from Greek origin. The last part of the paper attempts to discuss the key role of translation in knowledge transmission. Indeed, translators transfer knowledge driven by the desire to recreate a particular outcome in the target context.

^{*} Corresponding author.

1. introduction

This paper is a reflective historical study tracing back the contribution of Arab translators in the global translation movement. It scrutinizes the Arab's output in the field of translation starting from the era of the prophet Mohamed peace be upon him going through the Umayyad and Abbasid's periods till the establishment of Toledo school, which marked the beginning of the transfer of knowledge from the Arab world to Europe. It also focuses on the role of Arab translators in developing and later on transferring knowledge worldwide.

In this context, the research consists of four major parts: the first part illustrates how translation was a key factor for the spread of Islam in non Arabic speaking communities. Then it moves to the golden age, which witnessed two important eras: the Umayyad and Abbasid periods. This part develops fully how translation emerged unexpectedly, namely with the founding of the House of Wisdom. The third part brings about the major translation strategies that were developed by the pioneers of translation during the Arabic golden age. The last part elucidates how the translation movement contributed to the transfer of knowledge worldwide.

Based on this, the objectives of the present paper are as follows:

- ✓ To shed some light on the translation movement in the Arab world and elucidate the contribution of Arab translators to the whole global translation movement.
- ✓ To identify the progress and development of the translation movement in the Arab world.
- ✓ To discuss the main translation strategies that were adopted by the early translators in the Arab world
- ✓ To talk about the contribution of the Arabs in producing and transferring knowledge to the world.

2. Translation in the Pre Islamic Era (610-632 A. D)

Indeed translation in the Arab world dates back to the era of the Prophet Muhammad Peace be Upon him. Indeed, this period witnessed a remarkable emergence and prosperity of translation as the prophet Mohamed peace be Upon him encouraged his followers to learn foreign languages in order to translate Arabic into these languages aiming the spread of Islam and its transmission to communities, which did not speak Arabic.

This prompted the prophet Muhammad (PBUH) to enhance translation. Among the most well-known translators of that time was Zaid Ibn Thabet, who played a crucial role in translating the claims of the prophet to the leaders of the Jews, as well as the Persians and Romans urging them to adopt the Islamic religion. (Baker & Hanna, 2009)

In this context Khan & Al-Jawziah said:

"The spread of Islam and the communication with non-Arabic speaking communities as Persians, Assyrians, Romans and others motivated the prophet to look for translators and to encourage the learning of foreign languages. One of the most famous translators at that time was Zaid Ibnu Thabet, who played a crucial role in translating letters sent by the prophet to kings of Persia, Syria, Rome, and the replied letters sent by those kings to the prophet." (2009; 2003)

In addition to the reason of spreading the Islamic religion all over the world, Islam encouraged translation activities as a strong mobile and a fundamental criterion for knowledge acquisition aiming the building of prosperity of nations. Indeed, Islam provided great impetus for man's pursuit of knowledge. The first verse that descended on the Prophet Muhammad (PBUH) Was "Iqra" which means "read."

Indeed, seeking knowledge for Muslims has always been a must. Saeeda Shah claims that "Seeking knowledge, learning and reflection are permeating themes in the Quran." (2015: 34)

Before concluding this first part one can say that although the translation movement in the pre Islamic era was limited to communication between Arab tribes and other neighboring nations, such as the Romans and the Persians, yet translation really existed and contributed without any doubt in the spread of Islam. Additionally, the era of the prophet Mohamed (PBUH) is noteworthy in the translation history. Indeed, new religious terms have been introduced into Arabic and later on translated into other languages.

Communication with non-Arabic speaking communities in addition to the spread of Islam motivated the prophet (PBU) to look for translators and to enhance the learning of foreign languages. (Khan 2009 and Al-Jawziah 2003) Hence upon, the pr Islamic era established a significant ground for the development of the translation movement in the Arab world. (Mehawesh 2014: 685)

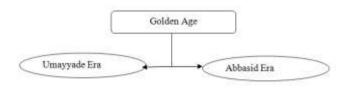
3. Translation in the Golden Age

The Golden Age refers to a period in the history of the Arab world, which traditionally dates back from the 8th century to the 13th century, during which much of the historical Islamic world was ruled by various caliphates. (George Sarton 1993:54)

As already mentioned, the concept of learning has always been fundamental in the Islamic philosophy and the Arab scholars were highly conscious that the acquisition of different sciences can be achieved only through the translation of this knowledge into Arabic. The golden age was the engine that fueled the flourishing of knowledge in the Islamic world.

Within this frame of reference, the following part will bring about an overview on the great achievements of the golden age in the field of translation. Hence upon as illustrated in the following figure the golden age included two major dynasties

Figure 1 The Golden Age



3.1 Umayyad Era (661–750)

The Umayyad Empire was the second major Arabic empire that succeeded the prophet Muhammad. It was established by a powerful family from Mecca and ruled from 661 to 750. The capital city of the Umayyad Empire was Damascus. (Gerald R. Hawting 2000:120)

The translation process during the Umayyad period is considered as the corner stone of the whole Arab translation movement. It began under the rule of Omar Bin Abd Alaziz, (Gerald MacLean, Nabil Matar 2011:45) who was one of the famous Umayyad caliphs. Indeed, he was a famous supporter of the translation movement. Additionally, his position as a member of the ruling family undoubtedly allowed him to enhance the transfer of the translation movement during this particular era.

He, himself, was a famous translator greatly interested in sciences. He largely requested the translation of works of Greek or Byzantine philosophers and scientists and rewarded translators generously for their works.

Hence upon, translation activity during this period focused on the acquisition of knowledge. The first treatises translated into Arabic were on Alchemy, Medicine, and Astrology. (Mona Baker Gabriela Saldanha 2011:330)

Another important achievement during the Umayyad dynasty was the Arabization of the administration under Ibn Marwan involving the translation of official documents allowing Arabic to become the official language of communication within the empire.

Within this context, Josef W. Meri said:

"The reception of the practical sciences and the progressive arabization under Islamic

rule led to a massive translation movement from

Persian, Greek, and Syriac-Armaic

sources into Arabic." (2006: 67)

At the end, of the Umayyad era, monumental works were already translated into Arabic. However, translation was not that prosperous as it had been during the next era. Nonetheless, the Umayyad era was beyond question the basis for any future translation development.

3.2 The Abbassid Era (750-1258)

The Abbasids had come to power after a vanquishing revolution against the Umayyad Caliphs in AD 750 marking a key period for the growth of the translation movement. In point of

fact, the translation developed dramatically during the ruling of Caliph Al-Mansour. (Hugh Kennedy 1981:20)

Under his rule, the capital was moved from Damascus to Baghdad, which soon became the greatest city in the medieval world. The city grew rapidly militarily economically and culturally. It dominated intellectually the world and became an empire stretching from across the East into North Africa.

In fact, this period knew various achievements such as:

- \checkmark The translation of the holy Quran.
- ✓ The building of the city of Baghdad
- ✓ The building of the House of Wisdom (Bait El Hikma), whose main project was the collection and translation of numerous works. This resulted in a substantial impact on the development of the Arabic translation movement.

One of the characteristics of this period is that interest in translation was not limited to rulers as was known in the Umayyad era, but extended to the rest of the society, which tremendously invested into developing translation through the establishment of centers concerned with rendering books into Arabic.

Furthermore, translation activities witnessed a dynamic progression during the reign of Caliph Al-Ma'moun, (813-833 AD) who sent translators to the East and the West to collect books and then translate them making several Greek scientific and philosophical books available to the Arabs. Such books were translated by famous translators like: Youhanna bin Al-Batriq Al-Turjuman, Abu Yousuf Ya'qoub Al-Kindi, and Hunayn bin Ishaq (Baker & Hanna, 2009; Mehawesh, 2014).

Ultimately, the Abbasids played a fundamental role in the development of the Arabic translation movement through their translation of various books belonging to different cultures such as Chinese, Persian, Indian, Greek, and Spanish. Translators during this era were highly encouraged and motivated "a translator was paid the weight of what he translated in gold." (Scott L. Montgomery 2000) At this end of this part, one can say that the objective of the translation movement during the Abbasid era was not to enrich the palaces of caliphs with books, but to fulfill the needs of scientific research.

Worth mentioning that the extensive literature available today in the fields of science, medicine and philosophy is the lasting credit of the rulers of the golden era, who encouraged translators and created institutions that led to the development of the entire world. Indeed, humanity owes a great debt to these Arab rulers, who had much invested in translations and publication of knowledge aiming its preservation for future generations.

2.2.1 The Establishment of the House of Wisdom

The intellectual climate imposed under the Abbassid rule imposed the building of an institute devoted solely to translation, and which came to be known as the House of Wisdom. It was a vivid scientific centre in which a great number of books were translated. Such books were on Greek philosophy, Indian Science and Persian literature. (De Cyril Glassé 2002:426)

Adel Abdul-Aziz Algeriani & Adel Abdul-Aziz Algeriani said that:

"The House of Wisdom has played a distinguished role in the history of the Middle Ages for it was a bridge that transmitted the ancient civilizations including the Islamic one to the west" (2017:184)

He added:

"Historians have a major consent that thanks to the House of Wisdom and other similar schools and libraries, the continuity of human civilization was preserved. (ibid)

As a matter of fact, this fascinating House of Wisdom was initially built by Caliph Haroun Al-Rashid, who ruled between 786 – 809 CE. At first, it was called called "Khizanat al-Hikma, " and included manuscripts and books relating to various topics in arts and sciences in different languages. Ahmed went as far as to describe it as the Baghdad Academy of Sciences (2008:10) Actually the library developed so quickly that three decades later, Caliph Al-Ma'mun, the son of Haroun Al Rachid was obliged to build extensions to the original building because the collection of books had grown so large that it needed further place. Hence upon the enlargement of the house of wisdom with the variety of books it embraced made of it the largest academy at that time housing different branches of knowledge.

It is also relevant to mention that many people including women flocked to this great academy from all over the Muslim world demonstrating that differences in sex, faith or ethnicity do not prevent people from pursuing their fondness for learning and keenness for seeking knowledge even in the farthest areas.

There upon, if we compare the Umayyad translation movement and its accomplishments with the Abbasid one, we can easily notice that the translation movement in the Umayyad era was limited in quantity and quality as it included only the translation of the basic sciences. As a matter of fact, it did not tackle the translation of logic and mental sciences, psychology and philosophy.

In fact, the Abbasids had an extensive desire to acquire knowledge and an ability to spread it particularly with the improvement they brought on printing, and which they had obtained from the Chinese.

3. The Pioneers of Translation in the Golden Age

The history of translation in the Arab world is full of eminent figures, whose achievements are still relevant in the world of translation today. The following part brings into light the accomplishments of two major names, which made the basis of the modern theory of translation.

3.1 Ibn al-Himsi (Literal Translation)

Literal Translation was conducted mainly by Ibn al-Himsi-a Syrian Christian-who translated Greek works into Arabic. He was one of the advocators of literal translation in which each Greek word was translated into its Arabic equivalent. This translation method is equated with what is referred to today as literal translation. (Omar EL GHAZI1 & Chakib BNINI 2020:71) Within this context Rosenthal argued: "The translator studies the meaning of each individual Greek word, chooses a corresponding Arabic word and uses it until in the end he has rendered into Arabic the text he wishes to translate. This method is bad for two reasons. First, it is impossible to find Arabic expressions corresponding to all Greek words and, therefore, many Greek words remain untranslated. Second, certain syntactical combinations in one language do not always necessarily correspond to similar combinations in the other; besides, the use of metaphors, which are frequent in every language, causes additional mistakes."

(2007)

In point of fact, the translator's task consisted in finding to each source word its Arabic equivalent by keeping the structure of the source language text in the target one. It was a strict literal method. Yet when a target equivalent was unavailable, it was usually transliterated by a Greek term and the perspective to find an Arabic equivalent was left to another translator. (Assamarg'i1982:216).

However, as many source language words did not have equivalents in Arabic, this imposed the translator to adopt the technique of borrowing, leading, in many cases to incomprehensible translated versions. (Remke1976:16-17)

Thereof much of the translations made by the advocators of literal translation during the golden era were not successful and many of them were later revised by Hunayn ibn Ishaq. (Omar EL GHAZI1 & Chakib BNINI 2020:71)

Hence upon the technique of calquing used by Ibn al-Himsi and his followers resulted in a literal reproduction of the source text, which was not in all cases relevant. In this context, Karen Bennet says that calquing destroyed meaning making the target text seem unnatural. (In Maeve Olohan, Myriam Salama Carr 20011:196)

However, Maeve Olohan, Myriam Salama-Carr argue that such a translation although not always relevant was not the result of lack of translation competence, but a deliberate decision from the part of the translator. (2011:197)

3.2 Hunayn Ibn Ishaq (Free Translation)

Free translation was a major translation procedure used in the house of wisdom and that was highly advocated by Hunayn Ibn Ishaq Al-Jawahiri, who focused more on the translation of meaning aiming the production of a flowing target text while preserving the sense of the source text. Indeed Hunayn Ibn Ishaq Al-Jawahiri, translated with a great commitment to the knowledge of the source text.

In this context Gutas Dimitri said:

"Some of the translations were deliberately not literal because they were made for a specific purpose and to serve certain theoretical positions already held. Thus, just as certain Greek texts were selected for translation because they were expected to provide information and arguments in discussions in progress in Abbasid society, the ideological or scientific orientation of these very discussions influenced the way in which the texts were translated"

(20012)

Hunayn ibn Ishāq claimed that translation should suit the needs of the audience. He rejected the view of untranslatability. According to him the translator should only seek for the right methodology. (ibid)

In this context, he proclaimed for sentenceparaphrasing as being

"the superior method of translation" claiming that a number of aspects between Arabic and English make translation impractical. Such aspects are related to differences in vocabulary, syntax, and metaphor.

Gutas Dimitri argues:

"Differences in vocabulary does not simply mean that the lexical items are different as such, but that the correspondences between a Greek and Arabic term do not line up, that there are not oneto-one relationships between Greek and Arabic words"

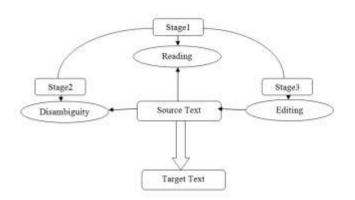
(ibid)

According to Hunayn ibn Ishāq translation should be broken down into three separate stages, and each translator should specialize in on stage. (al-Hamad 2001: 373-383)

These stages are illustrated in the following figure:

Figure 2

Hunayn ibn Ishāq Translation Procedures



As shown in the figure above the translation activity is conducted by a number of translators, who share a common objective, which is the rendering of an accurate piece of translation. The first stage is referred to as the reading stage. It is handled by a translator, who is in charge of reading the source text to the other translators with an illustration of the author's intended The meaning. second stage consists in disambiguating or explaining any difficult or abstract content in the source text. At the end of this stage, translators are given the choice to freely interpret the source text or translate it on the basis of its logic or textual construction. The final stage is the editing stage. It consists in using dictionaries to edit the target text and conduct checking of spelling.

In this context Rosenthal argued:

"The translator considers a whole sentence, ascertains its full meaning and then expresses it in Arabic with a sentence identical in meaning, without concern for the correspondence of individual words." (2007)

A further concern for Hunayn was clarity of style, which he considered as a prerequisite for a correct translation. In fact, he insisted on an efficient transmission of information, and he very often corrected the style of the original text to improve it before submitting it to translation. (ibid)

Hunayn also stood firm on the importance of the translator's practical experience, which according to him is crucial for a "good" translation." (ibid) In his opinion, translation is not just an academic discipline, but, rather an art. Hence, he insisted on the fact that a beginner in translation should always work under the guidance of a more experienced translator. (ibid)

One of the greatest translations of Hunayn was the Book of Animals (Kitab Al Haywan) by Aristotle. He translated it with a commitment to the knowledge rather than just producing a representation of the texts. His focus on content made him opt for the omission of some parts included in the source text because he conceived them as redundant. (Salama-Carr 1990: 58)

To conclude this part one can say that the two major procedures that were adopted during the Abbasid era were opposing. The first was based on a literal translation, while the second focused on meaning in order to render a more flowing text while preserving the sense of the original.

4. Toledo School and Transfer of Knowledge from the Arab World to Europe

Scholars in Baghdad during the Abbasid era contributed without any doubt to the preservation of Greek knowledge related to philosophy, astronomy, medicine, and many other disciplines through translation. They also engendered the growth of these sciences.

However, in the twelfth and thirteenth centuries, another transfer of knowledge occurred. Yet, this time from Arabic into Latin, resulting in a significant portion of Islamic philosophical and scientific learning made available to medieval European scholars.(I.M.N.Al-Jubouri2004:192)

The first translation institution from Arabic into Latin was established in Toledo by Don Raimundo, the Archbishop of Toledo from 1126 to 1151, (ibid) and because he was convinced of the capacities of the Arab philosophers in understanding Aristotle's works he invited them to work in this institution.

In fact, Toledo was a center of multilingual culture and had prior importance as a center of translation. It translated numerous classical works of ancient philosophers and scientists that had already been translated into Arabic during the Islamic Golden age, which enabled non Arabicspeaking populations at that time -both in the east, west, and even North Africa- to learn about many ancient classical disciplines that were generally inaccessible to the Christian parts of Western Europe. The School was one of the biggest Arabic contributions to the Occidental culture.

Over more than 150 years, Toledo became the great gate for the penetration of Ancient-Greek/Islamic-Golden-Age knowledge into Christian medieval Europe (Schipperges, 1976; Vatle, 1991)

Based on this, we can say that the establishment of Toledo had undergone three stages, which can be summarized as follows: (Mona Baker, Gabriela Saldanha 2011:534)

-The first Stage was known by a scholarly translation into Latin of medical, astrological and philosophical works of the Arab-Islamic heritage.

-The second Stage included the translation of about eighty books in collaboration with Muslim scholars

-The third Stage was characterized by the establishment of the Institute of Oriental Studies in 1250 CE /648 AH with the aim of fostering the learning of Arabic and Hebrew in order to benefit from the Islamic heritage.

5. Summary & Conclusions

Derived from the above review of literature, we conclude that the translation movement in the Arab world has started early in the pre-Islamic era and had been developed thoroughly in the Islamic era going through the Umayyad and Abbasid dynasties. Yet the Abbasid period marked the most important period in the history of translation movement through its contribution to the global civilization.

The Arabs had early realized that translation is a universal need for all nations at any time or in any place. They proved that translation activities are indispensable in all ages between nations.

The translation movement in the Arab world went through three major stages:

- ✓ Freelance translation carried out by translators during the pre Islamic era and the early Umayyad era
- ✓ Institutional translation carried out by translators during the Abbasid era and notably in the House of Wisdom.

✓ Specialized translation carried out by translators in the House of Wisdom and Toledo School.

The achievements of the Arabs in the growth of the translation movement are recapitulated as follows:

- ✓ Translation of literary and scientific books related to various branches of knowledge.
- ✓ Retranslation of books into European languages enhancing worldwide development
- ✓ Specialization of Arab translators in terms of knowledge and terminology enhancing the quality of translation.
- ✓ Institutional Translation, which developed from the stage of freelance translation
- ✓ Establishment of Arabic as a scientific language and a major mode of communication.
- ✓ Preservation of knowledge and its transmission to the next generations in the Arab and non-Arab world.

To sum up, early Arab translators contributed to the construction of modern civilization by revitalizing ancient Greek sciences and philosophy. The translators of these works were not mere transmitters, but also skilled scientists whose knowledge spanned a significant number of subjects.

Indeed, the great achievement of the human intellectual spirit was marked by the Arabic translation movement. Undoubtedly, Arab translators contributed to the transfer of knowledge among nations and from generation to others.

So, no one can deny the role of Arab translators in the growth of the movement of translation and in knowledge transfer. Conceivably, they transmitted an eminent input to the world through the creative and productive process known as translation.

-References

-Al-Hamad, Mohammad. 2001. Hiwar al-umam tarikh al-tarjama wa-al-ibda inda al- Arab waal-Suryan [The Dialogue of Nations. The History of Translation and Creativity Among the Arabs and the Syrians]. Beirut: Dar al-Mada.

-Adel Abdul-Aziz Algeriani **The House of Wisdom (Bayt al-Hikmah) and Its Civilizational Impact on Islamic libraries: A Historical Perspective** Mediterranean Journal of Social Sciences Vol 8 No 5 September 2017 ISSN 2039-9340 Doi: 10.1515/mjss-2017-0036

-Azzam Tamimi, John L. Esposito (2020) Islam and Secularism in the Middle East Hurst & Company, London

-Baker, M., & Hanna, S. F. (2009) Arabic tradition. In M. Baker & G. Saldanha (Eds.), Routledge encyclopedia of translation studies (pp. 328-337). New York, NY: Routledge.

-Bruno De Nicola, Charles Melville (2016) The Mongols' Middle East: Continuity and Transformation in Ilkhanid Iran BRILL LEIDEN BOSTON

-De Cyril Glassé (200) **The New Encyclopedia of Islam** ALTAMIRA PRESS A Division of Rowman &Little field Publishers Inc Walnut Greek Lunham New York

-De Labeeb Ahmed Bsoul (2019) **Translation Movement and Acculturation in the Medieval Islamic World** PALGRAVE Macmillan

-Dietrich, A. **"Ibn al-Ķifţī." Encyclopaedia of Islam**, Second Edition. Edited by: P. Bearman, Th. Bianquis, C.E. Bosworth, E. van Donzel, W.P. Heinrichs. Brill Online, 2014. Reference. University of Texas at Austin 30 July 2014

-George Sarton (1993) Ancient Science Through the Golden Age of Greece DOVER PUBLICATIONS, INC New York

-Gerald R. Hawting (2001) **The First Dynasty of Islam: The Umayyad Caliphate AD 661-750** Rutledge Taylor & Francis Group

-Gerald MacLean, Nabil Matar (2011) **Britain and the Islamic World**, 1558-1713 OXFORD UNIVERSITY PRESS

-Gutas, Dimitri. Greek Thought, Arabic Culture : The Graeco-Arabic Translation Movement in **Baghdad and Early 'Abbasaid Society** (2nd-4th/5th-10th C.). 30 1st ed. New York: Routledge, 2012.

-Hugh Kennedy (1981) **The Early Abbasid Caliphate: A Political History** Rutledge Taylor & Francis

-I.M.N. Al-Jubouri (2004) History of Islamic Philosophy: With View of Greek Philosophy and Early History of Islam A Bright Pen Book

-Jonathan Lyons (2009) **The House of Wisdom: How the Arabs Transformed Western Civilization** Bloomsbury Press New York Berlin London

-Khan, M (2009) **The Translation of Sahih Bukhari**, Islam house Website.

-Maeve Olohan. Myriam Salama-Carr (2011) Special Issue **THE TRANSLATOR** Science in Translation ST JEROME Publishing

-Mehawesh, M. I. (2014). **History of translation in the Arab world: An overview.** US-China Foreign Language, 12(8), 684-691.

-Mona Baker, Gabriela Saldanha (2011) **Routledge Encyclopedia of Translation Studies** Routledge.

-Mustapha, H. (2009). **Qur'ān (Koran)**. In M. Baker and G. Saldanha (Eds.), Routledge encyclopedia of translation studies (pp. 225-229). New York, NY: Routledge.

-Omar EL GHAZI & Chakib BNINI (2020) Arabic Translation from Bait Al-Hikma to Toledo School of Translators: Key Players, Theorization and Major Strategies International Journal of Linguistics, Literature and Translation (IJLLT) ISSN: 2617-0299 (Online); ISSN: 2708-0099 (Print) DOI: 10.32996/

-Remke,K.(1976) "Early Arabic Translators: Their Methods and Problems" in: Babel 1/76 vo122 pp:16-19

-Rosenthal, F. (2005). **The classical heritage in Islam** Taylor & Francis e-Library.http://www.myilibrary.com?id=15659 -Saeeda Shah (2015) Education, Leadership and Islam: Theories, Discourses and Practices from an Islamic Perspective. ROUTLEDGE

-Salama-Carr, Myriam (1990): La traduction `a l'epoque abbasside, vol. 6 of Collection Traductologie. Paris: Didier Erudition

-Scott L. Montgomery (2000) Science in Translation: Movements of Knowledge Through Cultures and Time THE UNIVERSIITY OF CHICAGO PRESS CHOCAGO AND LONDON.