

**(Im) Possibilities of Scientific Translation into Arabic****1. Prof. Dr. Mohamed Jalid**

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**Abstract**

This study will address a two-point issue in translating scientific text into Arabic, as it will attempt to define its various problems, and to determine the possibilities of its practice in the current Arab academic and cultural reality. This study assumes that translating scientific texts presents a two-fold challenge: identifying problems and suggesting solutions. This challenge lies in the fact that Translating scientific texts into Arabic often encounters both objective and subjective challenges that prevent accurate, precise, and fluent translation. Such a challenge has also to do with scientific knowledge, mostly characterized by highly objective, accurate, abstract, clear, proven, argumentative and logical/ rational construction of ideas and conceptions. Firstly, the translator has to solve the more specialized/ technical lexicon of scientific texts. He/ she is required to adopt multiple approaches to find possible equivalences for scientific terms and concepts, including coining, derivation, Arabization, transcription, etc. Secondly, the translator must maintain the accuracy and neutrality of the source text; that is, he/ she must maintain the source text (ST) accurate, objective, impartial, neutral, logical and rational dimensions in the target text (TT). This study will therefore approach the objective and subjective translational issues raised by these two aspects of the scientific texts. It will also attempt to make some recommendations that can improve science translations into Arabic.

**Keywords:** Scientific knowledge, Scientific language, Technical translation, terminology.

### Introduction:

How can we effectively translate scientific texts into Arabic while maintaining accuracy and clarity? that requires- like the translation of other texts- a comprehensive understanding and knowledge of the scientific arena to be transferred into a target language (TL), along with, of course, mastering its language, structure, style, as well as its metaphors, allegories, scientific and cultural implications, etc. At first glance, this translation entails specific scientific competence and academic qualification, given that different scientific writings are based on accuracy, rigor, thoroughness and objectivity, whether in terms of terminology, notions, expressions, implications and dimensions, or with regard to ideas, issues and trends implied by various sciences. Scientific language is not only characterized by the constant renewal and development of its terms and notions, but also by its tremendous ability to coin, derive and invent new ones, and borrow from other languages. Its flexibility to use abbreviations, formulas and symbols, such as those common in mathematics, physics, chemistry, etc., is of great importance too.

This article aims to identify the key challenges in translating scientific texts into Arabic and propose practical solutions based on identifying some problematic aspects of the scientific translation. It will also suggest some practical approaches that aim at solving those aspects. It will not attempt, however, to be a general contribution to scientific translation theories, as the Arab theoretical inputs in this field are numerous and diverse, both in Arabic and other languages.<sup>1</sup> Therefore, this article will shed light, in a first step, on the problems of translating scientific texts into Arabic, whether related to their terminology and concepts, or to their ideas,

<sup>1</sup> Here are some examples, to name but a few: Al-Wasity, S. and Yonil A. (1984). *Al-Tarjama Al-'Ilmiyya (Scientific Translation)*. Baghdad: Ministry of Higher Education and Scientific Research; Shoukry, A. (1986). *Al-Tarjama Al-'Ilmiyya (Scientific Translation)*. Beirut: Dar Al-Mashriq (Shoukry wrote later *Al-Tamarin Al-Tatbiqiyya li Kitab Al-Tarjama Al-'Ilmiyya (Applied Exercises for the Book of Scientific Translation)*, published in 1988 by the same publisher); Al-Khoury, S. (1989). *Dirassat fi Al-Tarjama wa Al-Ta'rib wa Al-Mostalah' (Studies in Translation, Arabization and Terminology)*. Damascus: Dar Talas; *Al-Tarjama wa Nadhariyyatuha (Translation and its Theories)* (Collective/ 1989): Carthage: Bayt Al-Hikma; Shunnaq et al. (1997). *'Alem Al-Tarjam (The World of Translation)*. Vol. 1. Amman: Jordanian Translators Association; Matar, A. S. (2007). *Al-Tarjama Al-'Ilmiyya*. Beirut: Dar Al-Mashriq. Mazid, B. (2009). *Al-Dalil Al-'Ilmy fi Al-Tarjama (Scientific Guide in Translation)*. Cairo: Shams li Al-Nashr wa Al-Tawzi'. Many more contributions by Arab scholars have been published in other languages, including: Farghal, M. and Shunnaq, A. (1999). *Translation with Reference to English and Arabic*. Irbid: Dar Al-Hilal for Translation; Alkhuli, M. A. (2001). *Science Translation from English into Arabic*. Jordan: Dar al-Falah; Tegnougui, K. (2019). *Handbook of Terminology: Volume 2. Terminology in the Arab World*. Netherlands: John Benjamins Publishing Company; Ben Slimane, M. (2021). *La terminologie scientifique française et sa traduction en arabe au XIXe siècle*. Paris: L'Harmattan...

issues and trends. Later, it will provide some recommendations in order to overcome and solve those problems.

### 1. Problems of Scientific Translation into Arabic:

If literary writing mostly tends to explain, clarify, even tautologize, embellish and beautify the text with descriptions, images, allusions, allegories and metaphors, the scientific writing usually adopts a straightforward language that aims at clearly highlighting the meaning. It avoids generalization, puzzling, implication, polysemy, etc. It seeks, however, precision and accuracy, on the one hand; abstraction, summarization and intensification on the other hand. In addition, scientific writing does not provide arbitrary appellations and denominations. Rather, it comes straight to the point when naming its objects of study; hence stems, in many cases, the importance of paying attention to such appellations and denominations that may sometimes seem strange when translated into Arabic. Their strangeness may be the result of carelessness and negligence of the specialized translation (Al-Touby, 2017: 301). To further advance in addressing this section of the article, I have to question the reasons behind the emergence of such carelessness and negligence. At the first glance, any scholar, with deep expertise of translation, can delve into objective and subjective reasons, which lie behind what Al-Touby has called the inadequacy of scientific terminology in Arabic.

#### 1.1. Objective Reasons:

By objective reasons, I mean the external causes, factors and obstacles that prevent, variably, the production of an accurate translation of scientific texts. The objective reasons are scientifically, linguistically, cognitively and culturally bound and are indispensable for a translator to achieve a good translation of every scientific corpus. In fact, such a goal cannot be entirely achieved, without a scientific climate that allows Arabic to create and internalize its scientific terms and concepts, and to elaborate and propagate a scientific discourse among cultural elites, and even within social entities. It is true that universities and scientific centres, throughout the Arab world, seem relatively active in keeping pace with the global scientific developments and achievements, in accumulating their own scientific researches and studies, and in writing and publishing.<sup>1</sup> However, this activity does not sufficiently contribute to a deep

<sup>1</sup> A study by Khalil Muhammad Al-Khatib, published by the Arab Scientific Community Organization (ARSCO) in 2020, indicates that the scientific production in the Arab World published in the International Scientific Index (ISI) between 2008 and 2018 exceeds 400.000 papers. It includes fields of electrical and electronic engineering, computer science, communication and computational systems, artificial intelligence, high

foundation and establishment of science in Arabic. The Arab scientific knowledge and culture is only sparingly influenced by the world huge scientific productions. In contrast, Arab contributions to different scientific arenas, whether in the Arab World or internationally, are widely done in foreign languages, primarily in English. Arabic contributions still mostly depend on limited borrowing and translating foreign scientific terminology. It goes without saying that this reality does not help enrich Arabic with scientific words and thought, even though Arab scientists and scholars are highly contributing to the contemporary global scientific civilization.

Arabic scientific production is not only affected by the results of writing in foreign languages, but it also negatively influences both the translation and its movement. Most readers of scientific texts are content to read scientific thoughts, including those written by Arabs, in their source languages. This is mainly due to the fact most Arab academic and educational institutions are content with teaching sciences in foreign languages, especially English and French, and effort of translation and Arabization are still burgeoning.<sup>1</sup> While scholars in humanities, social sciences, literature and critical, literary and theoretical studies devote themselves to translating major sources and references into Arabic, their peers investigating and teaching scientific fields are not following their example with the same pace. Some Arab governments- including the Moroccan one-<sup>2</sup> have even stopped teaching sciences in Arabic in primary and high schools.

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tech, energy, agricultural science, botany, life and earth sciences, bioscience, medicine, ecology, pharmacology, immunology, parasitology, physics, chemistry, nuclear science, etc. For more details, see Al-Khatib, K. M. (June 28<sup>th</sup>, 2020). "Waqi' Al-Bah't Al'ilmy fi Al-Watan Al-'Araby (2008- 2018): Dirassa Wasfiyya Tah'liliyya" ("The Reality of Scientific Research in the Arab World (2008-2018): A Descriptive and Analytical Study"), pp. 1- 18. [www.researchgate.net/publication/346460852\\_waq\\_albhth\\_allmy\\_fy\\_alwtn\\_alrby\\_-\\_d\\_khlyl\\_alkhtyb](http://www.researchgate.net/publication/346460852_waq_albhth_allmy_fy_alwtn_alrby_-_d_khlyl_alkhtyb)

<sup>1</sup> The efforts made by the Arabization Coordination Office, a branch of the Arab League Educational, Cultural and Scientific Organization (ALECSO), in terms of enriching Arabic with scientific and technological terminology, elaborating dictionaries, checking and unifying terminological databases, etc. Through its website, the Office states that its scientific library includes more than 10.000 dictionary and encyclopedic references. In terms of dictionaries, the following are but some examples: *The Unified Dictionary of General and Nuclear Physical Terms*, *The Unified Dictionary of Mathematical and Astronomical Terms*, *The Unified Dictionary of Chemistry Terms*, *The Unified Dictionary of Biological Terms*. There are other unified dictionaries for renewable energies, electricity, geology, mechanical engineering, meteorology, computational systems, genetics, oceanography, remote sensing, earthquakes, electronic warfare, food technology, pharmacology, veterinary medicine, civil engineering, anatomy, medicine, civil aviation, as well as dictionaries of humanities and social sciences terms.

<sup>2</sup> The Moroccan Ministry of National Education, for instance, adopted what was called 'international Baccalaureate courses,' which it generalized in 2023, claiming that scientific knowledge and studies are mostly available in French (a claim whose argumentativeness has yet to be verified).

To this is added the lingering of science Arabization and translation from various source languages. According to Muhammad Ahmed Tejjou, such a lingering is connected with several factors, including the training of translators, which stems from the scarcity of translation colleges, as well as the difficulties of publishing, readership, censorship, etc. (Tejjou, 2021). In addition, this lingering can also be traced to the weakness of scientific research services, financing and investment, to the limited involvement in sciences, and to the low popularity and reception of Arabic scientific books. The more we read in a field, the more we translate within it, as is the case of novels. On the other hand, the reasons of such lingering can be associated with the lack of national governmental policies and regional programs and plans that promote scientific translation, financing its projects and plans, and rewarding its achievements.<sup>1</sup>

The weak scientific working in Arabic, whether in the academic and educational field or at the level of translation, has resulted in weak production of databases of unified scientific terms and concepts, and in the limited impact of scientific researches, studies, encyclopedias, databases, contents, etc. Such weakness is also evident through the narrow scientific movement, the isolation of scientists, and the restriction of their activities to their institutions spaces. These reasons prevent science to become a general practice, a common culture, and even a lifestyle that makes individuals able to grow up with, to live it practically, intellectually and creatively, and to engage in it in their daily and social life, in public spaces, or even in their own work places. The weakness of scientific practice in Arabic not only results in a deficiency of scientific project, and in the lack of its impact on societies, but also hinders the development and deliberation of the scientific culture.

It is obvious then that these objective reasons deeply affect the translator's job. The fact that sciences are not mostly practiced in Arabic will naturally lead to less production of scientific terminology by the users of this language. Therefore, this will result in the lack of awareness of what I call 'the sensitivity of scientific texts,' which is characterized, as already mentioned, by the accuracy and consistency of their terminology, ideas and perceptions. Translating scientific texts thus becomes more difficult, sometimes impossible, due to the lack

<sup>1</sup> The prizes and awards dedicated to translation efforts in general include the King Faisal Prize, the Sheikh Hamad Award for Translation and International Understanding, the Sheikh Zayed Book Award, the Ibn Khaldun-Senghor Translation Prize, etc. However, these prizes and awards are distinguished by their overwhelming tendency towards the projects of literature, humanities and social sciences. The value of the fewer awards and prizes allocated to scientific translation, such as the Scientific Translation Award, yearly organized by the Egyptian National Centre for Translation, is weaker than those of literature, humanities and social sciences.

of accurate scientific equivalences. Because of this, one of the two basic translation conditions cannot be reached; I mean the linguistic and cultural knowledge that requires a total familiarity with the terminology and ideas of the source scientific lexicon. Once the linguistic knowledge falls off, the faithful and precise transfer of scientific knowledge will be badly affected. In the following section, I will consider some examples while addressing the subjective reasons that hinder translating scientific texts.

## 1.2. Subjective Reasons:

There is no doubt that the above-mentioned objective reasons will have a negative impact on the translator's transferring of scientific texts into Arabic. The limited teaching of sciences in Arabic, the weak interest of academies and universities in producing Arabic scientific terminology, the weak production of scientific dictionaries and encyclopedias, especially in terms of modern exact and technological terminology, among other reasons, deprive translators of their most important tool; I mean the specialized/ technical scientific lexicon. The latter almost represents, in various sciences, a terminological and conceptual unit that refers to a specialized scientific knowledge, sometimes specific to one field or discipline; that is, it is not common in other ones, albeit with different or intersecting meanings; hence stems its ambiguity and strangeness, in many cases, when translated into Arabic (and even to other languages). To this day, many terms and concepts, as translated into Arabic, are still ambiguous and confusing,<sup>1</sup> as we will see later.

### 1.2.1. Problems of Technical Terms:

Translators and translation theorists, and even scientists, agree that terminology is the basis of science language- of technical language, more precisely- because it implies a unity of meaning, reflects a special systemic knowledge characterized by strict and well-chosen

<sup>1</sup> Mahmoud Ismail Sinni points out that 40% to 60% of the translators' errors within technical fields can be traceable to the lack of specialized dictionaries. He also states that finding the exact equivalent takes 50% of the translator's time to finish his job. Sinni quotes this information from Krollman, who studied the technical translation in the seventies. (see Al-Smadi, H. M. (2022). "Challenges in Translating Scientific Texts: Problems and reasons," in *Journal of Language Teaching and Research*. Vol. 13, N° 3. Retrieved from: <https://doi.org/10.17507/jltr.1303.11> (last checked on June 14<sup>th</sup>, 2024). Al-Didaoui, a Moroccan scholar and translator, cites a close percentage. He says that looking for specialized equivalents may take a time ranging from 40% to 50%, and even more in some cases that require careful search and examination of specialized terms (Al-Didaoui, 2009: 46). It is worth noting, however, that these percentages regarding the translation time may differ from one text to another, as the quick or slow pace of translation is not limited to terms and concepts, but also includes the sentences' structure, metaphors, references, quotations, intertextual features, etc.

methodology, and is subject to a constantly creative and renewed process, as already mentioned. Although the scientific term is characterized by its comprehensiveness and is unconstrained to cultural influences (Al-Didaoui, 2012: 123), it raises many semantic challenges to the translator, not only concerning how far translated terms match their original ones, but also in terms of the absence of equivalents in the target language. Mohamed Sarairoh believes that terms, in translation from English to Arabic, either have direct equivalents, only partial ones, or no ones at all (Sarairoh, 1994: 79). Al-Didaoui goes further, when he says that technical language raises two basic problems: 1) identifying the technical terms and 2) linking it to a specialized discourse (Al-Didaoui, op. cit.: 46). Whenever its translation is correct, its meaning becomes clear, understood and used orally and in writing. If the translation is incorrect or unclear, its meaning is blurred, its use is blocked, its communication is hindered, and the translation fails therefore to achieve its goal(s). Such a failure may arise from the lacking semantic equivalence, the novelty of scientific terms, the ambiguity of their abbreviations, acronyms and denominations, and the lacking unity of their formulations.

Accordingly, the first problem in translating scientific terms into Arabic has to do with the semantic equivalence between the source and the target. ‘Istinsakh’ (cloning), which has been widely used within the Arabic scientific and media arenas since the achievement of ‘Dolly the sheep’ in 1996, is a telling example for such a problem. Such an Arabic equivalent does not accurately convey the intended meaning of the term ‘cloning’ in English or ‘clonage’ in French, for example. Both the English and French terms mean asexually reproducing an organism from a clone cell. Meanwhile, the Arabic term ‘istinsakh’ refers to two meanings: 1) erasing and removing, and 2) imitating or copying an original item. The second meaning is closer to the English and French terms. Nevertheless, it does not accurately reflect it at the semantic level. ‘istinsakh’ only indicates apparent similarity between the original and the cloned. It does not reveal their sameness and homogeneity; that is, the asexually reproduced organism is a second origin, and is not a copy. Finally, though the Academy of Arabic Language in Cairo adopted the term ‘istina’ (derived from ‘sinwu’) as an alternative to ‘istinsakh’, the latter is still used, in both scientific and media arenas, even though it does not convey the original meaning of the word ‘cloning.’

A second problem is reflected by the novelty of scientific terminology. A set of terms that appeared with the outbreak of Covid 19 can be cited here. Since it was discovered, Corona Virus has been producing a rich specific and general medical terminology. Prominent examples

include ‘Covid 19,’ ‘SARS-CoV-2 coronavirus,’ ‘coronavirus,’ ‘new virus,’ ‘viral epidemic,’ ‘quarantine,’ ‘social/ physical distancing,’ ‘hotspot,’ ‘health emergency,’ ‘medical terrorism,’ ‘mask war,’ ‘war on virus,’ ‘reference hospital/ laboratory,’ etc. The Arabization of these terms may seem simple, but it does not achieve a good communication and deliberation. Their translation into Arabic imply semantic ambiguity and does not correctly communicate their metaphors and allegories, some of which are sometimes very mysterious, and some others are linked to other fields, such as military (emergency, masks war, war on virus, medical terrorism, etc.). There are other terms that are used only within specific fields including, e.g., immunity lexicon, such as: super-spreader, outbreak, endemic-hyper or pandemic-hyper, laboratory protocol discourse, etc. New terms have also appeared, but do not necessarily refer to the medical, health or other semantic fields. Rather, they refer to new social phenomena. Here are some examples: ‘covidiot,’ which indicates a person who is careless of public health; ‘covidivorce,’ which means divorce cases resulting from those family problems during the quarantine; ‘social bubble,’ which refers to new social relationships that arose under isolation; ‘coronrial,’ which describes infants born during the epidemic, and many more.<sup>1</sup> On both levels, the incorrect translation of these terms into Arabic is due to many reasons: Firstly, these terms are newly coined, usually with unclear and instable connotations, and inaccurate and confusing metaphors. However, I assume that this confusion also arises from the source languages, including Chinese, English, French, etc. Such an assumption is based on the multiple origins of these terms. For instance, ‘quarantine,’ ‘isolation,’ and ‘confinement’ refer to the same practice, but are differently translated into Arabic.

A third problem lies in the use of abbreviations and acronyms within various scientific fields. They make referential units that shorten words or combine their initial letters in order to create new concepts or nominations. They are abundantly used in scientific writing, namely in mathematics, physics, medicine, pharmacology, technology, etc. They are characterized by the complexity of their encrypted formulation and meaning, hence the difficulty to be understood by ordinary readers. Their conciseness and abstraction sometimes make texts very ambiguous, and even difficult to be deciphered, and therefore translated into other languages, mainly those with different letters; such as Arabic. Regardless of the well-known abbreviations and acronyms

<sup>1</sup> For more terms, suggested translations and possible connotations, see Mazhoud, Salim (2021). “Al-Thara’ Al-Logh’awi Al-Jadid li Mostalah’i Ja’ih’ati (Covid 19) min khilal Siyyaqatihi AL-Dalaliyya” (“The New Linguistic Richness of the Pandemic Term (Covid 19) through its Semantic Contexts”), in *Al-Misdaqiyya Journal*, Vol. 3, N° 3. pp. 75- 85.

common thanks to media, such ‘laser’ or ‘AIDS,’ the translation of other complicated ones, which refer to more specialized terms and concepts, or of those that are only used by scientists, is not usually accessible or obtainable. This is either because of their multiple uses,<sup>1</sup> of their constant change and renewal, of their changing connotations from one discipline to another, of their being borrowed from a language other than the one of the source text, or of their being part of a graphic data. Their coinage and derivation is also a challenge to the translator, because some are made of letters, while others consist of letters, numbers and other symbols, e.g., ‘Ca<sup>2+</sup>,’ which refers to calcium ions.

A fourth problem lies in the fact that some scientific terms and concepts are linked to the people who coined them or the places where they appeared. In electricity, ‘watt,’ a unit of power equal to 1 joule per second, refers to the Scottish engineer and inventor James Watt. The same applies to ‘ampere,’ a unit of electric current named after the French physicist and mathematician André-Marie Ampere. Translating such terms and concepts may not be yielding, because they represent stand-alone lexical and semantic units in modern and contemporary scientific and technical language. ‘Watt’ and ‘Ampere’ are clear instances, yet more ambiguous or less known ones require to be clarified and explained in footnotes.

Finally, the lacking unity of scientific terminology formulation in Arabic deeply affect translation, not only linguistically and textually, but also in terms of perceiving it as a scientific semantic unit that should systematically appear in Arabic with all its cognitive bearings. In addition, by respecting such bearings, translation into Arabic must provide the same conceptual and cognitive convention that is reflected in the source texts. Therefore, unified terminology will surely allow avoiding what may be called ‘terms chaos,’ achieving knowledge accumulation, and developing the scientific lexicon, which is the backbone of scientific knowledge.

### 1.2.2. Challenges of Scientific Knowledge:

It is obvious that the difficulty of translating terms and concepts will affect transferring scientific knowledge into Arabic. It is also natural that the ambiguity of a term or concept will make texts and their knowledge confusing. While translating, preserving the meaning of the source text and its scientific integrity requires understanding the nature of the scientific issue

<sup>1</sup> ALPHA, for instance, is used to refer either to ‘Adolescents Learning Positive Health Alternatives’ or to ‘Advanced Leadership Produces Higher Achievements.’ The meaning of such an acronym varies depending on the field in which it is used.

that it discusses. This question is manifested, for example, by the difficulty- if not the impossibility- of transferring equations of mathematics or physics into Arabic, or by the difficulty to translate the newly coined scientific terms or newly created scientific ideas. The semi-daily created technical, digital and electronic English words are the best examples to provide here. To meet such a challenge of novelty, translators are required to keep pace with scientific developments of all kinds.

It also obvious that translation must maintain the special character of scientific discourses and writings. Translating a literary text requires interpreting the writer's intentions and preserving his/ her smooth literary style, and keeping psychological and emotional elements. In contrast, translating a scientific text requires conveying the writer's accurate and rigorous idea, because his/ her writing excludes subjectivity and is based on neutrality, rationality and objectivity, as they are necessary conditions in scientific writings. As already mentioned, such writings sometimes use symbols, abbreviations and acronyms, as modes of abstraction. These represent at the same time linguistic templates highly imbued with exact knowledge, which translators have to assimilate its specific semantic dimensions. For example, 'algorithm' does not only refer to a special method of calculation, but also represents an analytical approach used in many fields, including computer science and internet. Therefore, translators are not only required to maintain the accuracy, brevity and lucidity of the scientific text, but also its objective and logic structure and scientific approach. Such a requirement may seem unobtainable, which entails that scientists themselves must undertake this kind of translation.

## 2. Recommendations:

Based on the above-mentioned challenges and problems, the approach aiming at improving the translation of scientific texts becomes clear. It goes without saying that recommendations shall deal with both the subjective and objective reasons. It is worth noting that translators alone cannot find appropriate and sufficient solutions for all reasons, no matter how they are qualified and skilled. Translation must be a comprehensive project that responds to reading, learning, searching, and practicing science. Moreover, it must answer the countries' and societies' need to build a renaissance, to keep pace with other countries and societies, and to engage and contribute to human civilizations, etc. The urgent question here is: Can Arab countries and societies establish this project, even at a minimum level that responds to the need to build translation competencies and skills in scientific fields?

The answer to this question depends on establishing a solid relationship with all sciences, whatever their languages. Such a purpose is conditioned by the existence of a unified specialized institution- similar to the Abbasid House of Wisdom- whose work is not only limited to training translators for tasks of Arabization, but also to keeping an eye on basic international scientific products, financing their translations into Arabic, and printing and distributing them. In addition, the answer to the same question must be linked to the establishment of translation education colleges (similar to King Fahd High School of Translation in Tangier) and university departments, and the generalization of translation training and courses within Arab universities of sciences and technologies. Such a choice may contribute to producing technical terms and bridging the gap between Arabic and other world languages, especially those active in coining and producing contemporary scientific terms and discourses.

In turn, scholars can provide an answer by seeking a joint scientific initiative between Arab scientists and scientific institutions, the purpose of which is to enrich Arabic and the Arabic scientific discourses with scientific terminology, either through translation, or by coining, deriving, renewing terms of old Arabic sciences, and developing today's innovative scientific terms. Such an initiative can examine, correct and adjust common words. It can also unify those having connotations commonly used with radically different meanings between the Mashreq and the Maghreb. Moreover, it can clarify their different uses in various fields and disciplines. Finally, it can create unified Arabic symbols, abbreviations, acronyms, signs and denominations used by various sciences, and keep thinking about coining, renewing and developing technical terms.

It is obvious therefore that the project of science establishment, of translation institutionalization, and the scientists participation in producing scientific terminology and discourse, albeit gradually, will contribute to solving scientific translation problems; that is, to abrogating the above-mentioned subjective and objective reasons. There is no doubt that these recommendations will help, for example, to (a) review scientific glossaries on a permanent basis, (b) create and develop specialized and classified scientific dictionaries in various fields and disciplines, (c) set databases for already-done scientific translations. They can also help (d) constantly identify and update information about developments in sciences, as well as (e) provide reference guides for abbreviations, acronyms, symbols and denominations with their Arabic translation. With these references and guides, translators can come up with many

translation possibilities and can overcome those impossibilities still imposed by ambiguities of scientific terminology, language, discourse, or even of specific scientific abbreviations, acronyms, symbols and denominations.

### Conclusion:

This paper has focused on two broad aspects: The first is about examples of subjective and objective reasons hindering scientific texts translation. Such problems are not only related to the limited linguistic skills and cognitive knowledge needed to fulfil such a task. They are also linked to the absence of political and institutional framework and scientific climate that can make science an academic, cultural, and even a social practice using local language(s), not foreign languages- namely imperialist ones-, responding to societies' needs, reflecting its challenges, and aspiring to progress and development... Thus, translation, in its inclusiveness, becomes part of a comprehensive project of literature, art, thought, science, etc. Translators can benefit from the new knowledge, terms and concepts accumulated in Arabic within these various fields.

The second part has provided some recommendations aiming at addressing both subjective and objective reasons. Firstly, an Arab dynamic scientific creation and development require that Arab scientists have to contribute to the local and global scientific movement in their own language. Such an aspect proceeds from the Arab self-awareness of reconnection to the old scientific legacy and building an Arab scientific renaissance capable of interacting and keeping pace with the global scientific civilization. Such an awareness can also be reflected through using Arabic as a language of writing about and communicating scientific products. There is no doubt that this aspect will contribute- if achieved, though not impossible- to enriching Arabic with scientific terms, concepts and knowledge, which may also allow translators carry out their Babylonian job within various arenas of science. They will then be able to overcome the problems of translating scientific texts, get rid of translation errors, establish scientific terms, concepts and knowledge, find the right equivalents of newly coined ones as quick as possible, and even sow the seeds of scientific knowledge again in the Arab culture.

The possibilities of a qualified and skilful scientific translation is therefore a complex interrelated project, which is not only linguistically bound, but has also to do with cognitive-

scientific dimensions. Such a project has finally to solve the objective reasons hindering the translators' work and to be deeply linked to the Arab renaissance in general.

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