Aspects of Scientific Translation in contrast to Literary Translation with reference to English and Arabic

Research · January 2013

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Aspects of Scientific Translation in contrast to Literary Translation : with reference to English and Arabic

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Abstract

It is unquestionable that scientific translation from English into Arabic and vice versa is increasingly becoming a topic of much concern and importance today. Translating of full technical texts from English into Arabic or the other way round still poses a major intellectual challenge. This stresses the paramount importance of scientific translation. The need for this type of translation is getting increasingly important because many Arab countries are currently undergoing a large-scale modernization process. In addition, Arabic suffers a serious shortage of vocabulary that covers the fields of technology and science; therefore, translators should consider this problem before anything else. This paper highlights the problems that are likely to be encountered in English and Arabic scientific translation and tries to establish certain possible factors which may finally lead to a theory of this sort of translation. It also identifies certain differences that exist between scientific and literary texts in both languages.

O. Introduction:

Language is one of the most important basis for a nation to play its cultural role, because it is one of the elementary tools for prosperity and development through the capability to fulfill the most recent requirements and needs specially what concerns culture and science. Likewise, translation is an important element to serve the development of any society as it plays the role of transferring culture, information and knowledge of various nations between each other; so it is the key to cultural exchange and cultural

dialogue. Knowledge possession is a wide open door for progress and development. In order to join such progress, a country usually endeavors to be acquainted with other country's experiences and techniques by means of knowledge transference. Translation operates like an enzyme in chemical interactions, it is used as a platform driving international elite to improve human intelligence and knowledge to empower innovators, researchers and scientists to create and innovate.

Consequently, translation in general and scientific translation in particular, is so important to join the rapid developments in order to build the national capacities in a scientific vision by transferring the latest information to the target recipient . Otherwise, knowledge shall be useless if not utilized according to the country's needs. One of the challenges to be met is to catch up with the international scientific and technical progress to ensure our existence as a nation with a cultural message.

Literary studies have always, explicitly or implicitly, presupposed a certain notion of `literariness' with which it has been able to delimit its domain, specify, and sanction its methodologies and approaches to its subject. This notion of `literariness' is crucial for the theoretical thinking about literary translation.

In contrast to their literary counterparts, scientific texts underline the information content without bothering about features that are characteristic of poetic texts, such as rhyme, and connotative or symbolic meaning. Translating of full technical texts from English into Arabic still poses a major intellectual challenge. It is axiomatic that not all ideas or information are recorded in one single language. This stresses the paramount importance of scientific translation into Arabic. The need for this type of translation into Arabic is getting increasingly important because many Arab countries are currently undergoing a large-scale modernization process.

1. Translating a written Text:

Translations between written languages in different languages remain today the core of Translation Studies and globalization of it. This focus has broadened far beyond the mere replacement of source text (ST) linguistic items with their target text (TT) equivalent. In the intervening years, studies have been conducted

and undertaken into all types of linguistic, cultural, political, social, ideological and globalization common phenomena around translation. In theater, translation for example adaptation of geographical or historical locations and of dialects is very common. Within the ambit of text linguistics, text was initially viewed as an organised unit larger than a sentence which consists of a sequence of formally (*i.e.* morpho-syntactically) and semantically linked utterances unified thematically as well. This means that a text was understood as a network made of intertwined syntactic wholes: individual sentences and paragraphs. This, by a long way, oversimplified formal conception of a text was substantially altered after the so-called communicative-pragmatic turn in linguistic studies at the outset of the 1990s when a text started to be conceived of as "text-in-function", "text-in-situation", as a "socio-communicative functional unit" (Schmidt qtd. in Göpferich, 2006: 61).

In this regard, de Beaugrande and Dressler (2002: 10) interpret text as a "communicative occurrence" which must meet certain standards/criteria of textuality, these being: cohesion, coherence, intentionality, acceptability, informativity, situationality and intertextuality. If any of these standards is not considered to have been satisfied, the text will not be communicative and in turn, non-communicative texts are treated as non-texts.

Göpferich offers the following definition of text in her article in the seminal German publication *Handbuch Translation* by Snell-Hornby:

A text is a thematic and/or functionally oriented, coherent linguistic or linguistically figurative whole which has been formed with a certain intention, a communicative intention and which fulfils a recognizable communicative function of the first or second degree and represents a functionally complete unit in terms of content (for the communicative function of the first or second degree); (Göpferich, 2006: 62; translation by author).

1.1. Literary Translation:

The traditional discussion of the problems of literary translation considers finding equivalents not just for lexis, syntax or concepts, but also for features like style, genre, figurative language, historical stylistic dimensions, polyvalence, connotations as well as

denotations, cultural items and culture-specific concepts and values. The choices made by the translators like the decision whether to retain stylistic features of the source language text or whether to retain the historical stylistic dimension of the original become all the more important in the case of literary translation.

Peter Newmark (2004:11) cogently sums up the difference between non-literary and literary translation along these lines:

Literary and non-literary translation are two different professions, though one person may sometimes practise them both. They are complementary to each other and are noble, each seeking in the source text a valuable but different truth, the first allegorical and aesthetic, the second factual and traditionally functional. They sometimes each have different cultural backgrounds, occasionally referred to as 'the two cultures', which are detrimentally opposed to each other. Taking a critical approach, he then goes on to assert that while "literary [translation] is viewed as traditional, old-fashioned, academic, ivory-tower, out of touch, the non-literary is philistine, market-led, coal in the bath [and] uncivilized"(ibid.).

One way or another, having contrasted the two textual genres from the point of view of their properties, language content and translation, seen matter-of-factly the differences between them are more than obvious.

1.2 . Non-literary Text and Translation:

The label "non-literary text", as broad as it may seem, covers a wide range of texts from administrative, legal and other official documents, via economic and business texts, scientific, technical up to publicist texts. If the style of non-literary texts were to be analyzed, one of their quintessential features would in all probability be represented by notionality, being the consequence of their thematic structuring since pragmatic content requires precision and unambiguously stated terms. In accord with this, the semantics of non-literary texts' words is confined to systemic coherence and all the other irrelevant associations are pushed to the background.

As far as the language of non-literary texts is concerned, there is a striking tendency towards stereotypical structures and language clichés in general. Precisely these means of expressions make the non-literary style more or less formalized. The direct relationship

between language on the one hand and extra-linguistic reality on the other seems crucial in the non-literary style. Accordingly, non-literary translation in its essence stands for a "stylistic operation which is based not on the transfer of aesthetic but pragmatic information" (Popovič, 1977: 192). A common point where literary and non-literary style meet is a stylistic field of iconicity since the translator of a 'non-literary', 'specialized', 'pragmatic' or 'non-fictitious' text, whatever its name, cannot be completely resistant to the figurative way of expression (ibid.: 193).

Notably, the non-literary text is based on the plain communication of facts and information; and simultaneously it appeals to the receiver to act in a certain way (Reiss, 1981/2000: 163). It is at this point that literary texts, in contrast to specialized texts, certainly stand for a very cultural medium of expression where the achievement of the proximity of (socio) cultural norms between the SL and TL is of supreme importance.

In order to grasp the specifics of literary translation, it is deemed reasonable to look at the properties of a literary text first. These are pre-determined by the realm of literature, which has an innate capacity to appeal to one's feelings and unfetter one's imagination. Bearing this in mind, it might seem appropriate to pose the question why most people usually enjoy literary texts much more than their non-literary counterparts. It would not be an overstatement to suggest that literary texts guarantee entertainment on the basis of their artistic quality, provide the recipient with the author's experience or world-view which may motivate them to think, act and re-evaluate their attitudes.

Noticeably, the most important feature of a literary work of art is that it is a bearer of an aesthetic function. A Literary text comes into existence as a subjectively transformed reflection of the objective reality in tune with the aesthetic-emotional intent of the author: he/she endeavours to convey his/her ideas, thoughts and emotions, which is enabled by his/her orientation towards experience. From the point of view of the language resources choice, an immense lexical variability coupled with the uniqueness of expression comes to the fore here. Another crucial feature of literary text is connected with the release of the polysemy of words for an adequate understanding of the text is achieved only "through a careful mapping of its entire denotative and connotative

dimension" (Hermans, 2007: 82). Besides, it is claimed that the principal feature of literary text rests on its focus on the message, not on content (Landers, 2001: 7; Burkhanov, 2003: 139; Hermans, 2007: 78-79; Sánchez 2009: 123).

Consequently, literary translation must be approached as "a kind of aesthetically-oriented mediated bilingual communication, which aims at producing a target text intended to communicate its own form, correspondent with the source text, and accordant with contemporary literary and translational norms of the receptor culture" (Burkhanov, 2003: 139). In the ambit of literary translation, the translator delves in the aesthetic pleasures of working with great pieces of literature, of recreating in a TL a work that would otherwise remain beyond reach or effectively encrypted.

One of the exasperatingly difficult things about literary translation in general is the translator's ability to capture and render the style of the original composition. Notably, in literary translation *how* one says something may be as significant, sometimes even more significant, than *what* one says. In technical translation, for instance, style is not a consideration as long as the informational content makes its way unaltered from SL to TL.

2 . Non-literary versus Literary Text:

Having paid due attention to non-literary and literary text separately, the substantial difference between the two is that whereas non-literary text is concerned with information, facts and reality, literary text comprises the world of the mind, *i.e.* ideas and feelings and is grounded on imagination.

While non-literary texts are primarily about objects from the extra-linguistic reality, literary texts usually revolve around fictitious characters, being ontologically and structurally independent from the real world. Even though literary texts attempt to represent reality, they only imitate it at their best, which makes them mimetic in nature. This pre-determines some semantic specifics of these two text types under discussion: while non-literary texts are based on precision, reason and can be characterized by more or less logical argumentative progression, literary texts as the product of author's imagination offer a breeding ground for vagueness of meaning, ambiguity and multiple interpretations. Besides, non-literary texts are written to be

skimmed or scanned, while literary texts are produced to be assimilated slowly or repeatedly and widely appreciated by readership. Non-literary texts, on the one hand, are expected to fulfil a certain pragmatic function while literary texts, on the other, are not intended for any specific purpose; they can convey a range of intentions (to inspire, offer advice or even shock), although they can gain their more specific and possibly individual pragmatic function during the reading process.

Concerning linguistic properties of the investigated textual genres, the language of literary texts is susceptible to getting old quicker because the text's stylistic layer is burdened more in comparison to non-literary text. By contrast, what is getting old in non-literary text is actual text information only (Popovič, 1977: 192). Further, in terms of lexical specificities, vocabulary of non-literary texts is based on a high degree of notionality, standardized language schemata and clichés with no register blending permitted. On the contrary, the lexical facet of literary texts cannot be squeezed into any sort of universal patterning, depending on author and his/her lexical richness it varies from text to text. An important difference in lexis between the two textual genres also lies in the use of poetic language, so endemic to literary texts, abounding in metaphors, similes, personifications and other poetic devices which in a way make the language of literature truly specialized, too. However, in marked contrast to non-literary texts, no specialized subject matter knowledge is usually required for a literary text's comprehension.

Moving onwards, contrasting non-literary and literary texts from a translational point of view, some radical dissimilarities can be observed, too. Firstly, rendering non-literary text demands frequently complete faithfulness to the ST and utmost precision in terminology, not admitting a very creative participation for the translator. Especially the translation of institutional-legal text is heavily controlled and governed by norms. On the other hand, translation of literary text is freer and more creative for it is supposed to offer an undistorted interpretation of the fictitious culture, serving as a gateway to the fictitious world and its culture. Thus, "if literary translation is considered an art, then non-literary translation may be considered a science" (Hrehovčík, 2006: 56). Secondly, in non-literary texts the author's personality is hidden to

say the very least, if not invisible, whereas in literary texts writer's personality is fully exposed given the communication of his/her world-views, attitudes, and convictions. Thirdly, the interpretation aspect in the non-literary text fulfils only an auxiliary function in stark contrast to literary translation (Popovič, 1977: 192).

Consequently, the non-literary translator is required to be an expert in the field in which he/she translates in order to be able to perform an adequate intra-semiotic translation.

2.1. Scientific Translation:

Translation is both a product and a process. It is the analysis of source text (ST) and transferring the message to the target text (TT) with different structure, corpus, form, function, genre, register and discourse. From the teleological point of view, scientific translation is a process of communication and to impart the knowledge of the original to the foreign reader.

Scientific Translation studies are still to be found as a new emerging discipline. It has developed to such an extent which is a perfect interdisciplinary with host of other fields. The fields of Philosophy, linguistics, history, medical sciences, art and language engineering interfacing with the new emerging discipline of Translation Studies. In scientific texts we have an end in view and the means necessarily remains within the general conceptual framework within which the end is defined.

Scientific translation, thus, becomes a prerequisite not only for the acquisition of technology, but to its introduction, installation, and operation as well. According to London Institute of Linguistics, to be a scientific translator one should have:

1. Broad knowledge of the subject-matter of the text to be translated;

2. A well-developed imagination that enables the translator to visualize the equipment or process being described;

3. Intelligence, to be able to fill in the missing links in the original text;

4. A sense of discrimination, to be able to choose the most suitable equivalent term from the literature of the field or from dictionaries;

5. The ability to use one's own language with clarity, conciseness and precision; and

6. Practical experience in translating from related fields. In short, to be a technical translator one must be a scientist, or engineer, a linguist and a writer (cf. Gasagrade, 1954: 335-40; Giles, 1995; Lotfipour, 1996).

In contrast to their literary counterparts, scientific texts underline the information content without bothering about features that are characteristic of poetic texts, such as rhyme, and connotative or symbolic meaning. Let alone other aesthetically features, which Schmidt (1971: 59) has defined as "polyfunctionality."

One also notices that most of the elements in scientific texts are not unexpected. One might even define the meaning of these texts according to the actual use of items to refer to things in the real world or to the "extension" as contrasted to the potential meaning of things as they are perceived, conceived, or represented in terms other than their actual appearance and/or function by the perceiving man, or to the 'intention' of their producers (Weinrich, 1976: 14). Scientific Translation is a bridge that has huge effect between nations on everyday life and draws on a wide range of languages.

Science does not have its own syntax only, but also its own terminology. And this paper has already hinted at the importance of the familiarity with this terminology resting on a solid foundation of previously acquired knowledge on behalf of the translator. Therefore, it is not the language itself which is special, but certain words or their symbols.

3. Scientific versus Literary Translation:

There are four steps in the process of translation:
1. Receiving: This is a mechanical process.
2. Comprehension: This is a mental process.
3. Moulding: This is a mental process.
4. Transmitting: This is both mechanical and mental process.

After the translator grasps all the four steps he/she should bear in mind the following differences:
1. In literary translation long sentences are used, whereas in scientific translation short and direct sentences are used.
2. In literary translation the figures of speech (metaphor, personification, irony, simile, etc) are used, whereas in scientific translation there are no uses of it.

3. Feelings, emotions, memories, sentiments are usually used in literary translation.
4. Literary translation is mostly personal, and scientific translation is mostly impersonal.
5. Tenses used in scientific translation are limited (present simple, past simple, future), whereas in literary texts almost all the tenses could be used.
6. Literary style is mostly indirect, whereas scientific style is mostly direct (using direct sentences).
7. Adding in literary translation is allowed, whereas it is not in scientific translation.

Now, to make the above mentioned differences clear the following sample is analyzed:

Gastritis

Cause: The disease may be brought on by taking any substance which is in itself poisonous into the stomach; by a large amount of food taken at one time when the constitution is feeble, or when there is convalescence from some serious illness. The disease is sometimes brought on by imperfect mastication of food. The doctor should be called in on the appearance of the symptoms and his directions implicitly followed.

Symptoms: Gastritis is inflammation of the mucous membrane of the stomach, causing pain of a burning character at the pit of the stomach, vomiting on eating and drinking, and sometimes hiccough. The pulse becomes small and feeble; the patient is pale and faint, with cold extremities; the movements of the diaphragm cause pain and consequently the breathing is short; there is tormenting thirst at times, although the water drunk is vomited at once.

التهاب المعدة:

الأسباب: قد يحدث هذا المرض نتيجة تناول مادة سامة أو كمية كبيرة من الطعام في وجبة واحدة رغم ضعف البنية أو في فترة النقاهة عقب مرض خطير. وقد ينشأ المرض نتيجة عدم مضغ الطعام جيداً. وفي هذه الحالة يجب استدعاء الطبيب فور ظهور الأعراض و إتباع إرشاداته بدقة بالغة.

الأعراض: مرض التهاب المعدة هو التهاب بالغشاء المخاطي للمعدة. ويسبب ألما حارقاً في فم المعدة وقيئاً حال تناول الطعام أو الشراب. وقد يعتري المريض الفواق أحياناً ويصير نبضه ضعيفاً كما يعتريه شحوب ودوار وبرودة في أطرافه. وتسبب حركة الحجاب الحاجز ألماً للمريض ومن ثم يعاني ضيقاً في التنفس ويشعر بين آونة و أخرى بعطش شديد رغم قيئه الماء الذي يشربه فوراً.

Analysis of the English text:

1. The language is informative. This can be noticed from the sentences that express definitions and descriptions. It does not express the emotional feelings of the writer towards the disease.

2. An impersonal style is used. This is clear in the following features:

a. The subjects of the sentences are generally abstract, based on general ideas and not particular person or thing. Thus in paragraph 2 we find "Gastritis", "The pulse"...etc.

b. The "passive" is extensively used. Thus in paragraph 1 we find "be brought on", "taken at", "be called". The use of the passive in English focuses attention on the effect or result rather than the person performing the action.

c. The text in question follows a purely descriptive pattern, and does not involve procedures performed by human beings in particular. This explains why sentences are not marked by an connectives.

d. Nominalization is common. Some samples from paragraph 2 are: "inflammation of the mucous", "the cold extremities", "tormenting thirst", etc. The nominalised style is easier to write and its impersonality avoids commitment to tense.

3. Only the simple present tense is used. Some samples are "is", "becomes", "cause", etc.

4. All the sentences follow a direct scientific style.

5. Except for sentence 1 in paragraph 1, other sentences are usually short.

Analysis of the Arabic translation:

Almost all the points indicated about ST may apply to the Arabic TT except the following:

1. The ST passive constructions are replaced by the active. This is because Arabic tends to reveal an obvious preference to verbs in active voice, in clear contrast to English. Examples are:

"be brought on" is translated as ينشأ / يحدث

"drunk" is translated as يشرب

2. In contrast to the English ST, the Arabic TT uses the weak connectives which are part and parcel of Arabic punctuation. Examples are: " و ", " ثم ومن ", " كما ", etc. This explain why the Arabic sentences are larger than the English ones.

انطفأت النيران وخرجت مريم منتصرة تحكي قصتها في كل مكان بالتفصيل الممل ويعلو وجهها إمارات فرح شيطانية. عادت إلى الناس وقد داوت جروحها ولكنهم لا يملكون صبر عل الاستماع إلى مغامراتها ابد الدهر. لقد انقضت بهجت الخبر وانتهى سحره وبريقه. و أصبح تكراره مملا مضجرا. لا تملك مريم مقاضاة الناس على إهمالها وقد جرجرت أذيال خيبتها من جديد إلى بيتها الفسيح العتيق. أغلقت أبوابه الثلاثة وحيدة يسمعها الجيران أحيانا تحدث الجدران. غابت مريم طويلا ولم يخرجها جوعها هذه المرة.

The fires were extinguished and Mariam came out triumphant telling her story everywhere. There was a devilish glee up her face. She was back to the people she knew and she had treated her injuries, but they were too impatient to listen to her adventures forever. The glow and magic of the news had vanished and repeating it had become very boring. Mariam had no right to complain of the people who had neglected her; and she dragged the remaining vestiges of her disappointment to her large old house shutting off its three doors to live alone. She was sometimes heard by the neighbours talking to the walls. Mariam disappeared for a long time; and no hunger could force her out.

The following are typical features of literary texts in English and Arabic:

1. The language is usually expressive; it is figurative and manipulated in the direction of colourfulness. Here, the writer expresses some emotional feelings towards his characters and topic.

2. While Arabic uses weak coordinators to link the sentences of a text together, such as (الواو, الفاء, ثم, etc), English uses a complex system of punctuation and subordination that express specific textual functions, such as (however, therefore, since, etc).

3. The Arabic language is profuse with emotive expressions carrying connotative meanings that are not easy to preserve in translation. This is because an emotive meaning is a function of responses to words. It is a tendency of a word, arising from the history of its use, to produce affective responses in people. By way of illustration, consider the following: يعلو وجهها إمارت فرح شيطانية,
وقد جرجرت اذيال خيبتها, بهجة الخبر ....

4. Translating a literary text from one language into another, especially when each belongs to a different culture, a lot of meaning loss is expected. This loss may be affected on all levels: lexical, grammatical and cultural.

The literary translation is a device of art used to release the text from its "dependence on prior cultural knowledge" (Herzfeld, 2003; p.110). However, it is not an easy task to transplant a text steeped in one culture into another. Particularly demanding from the translator's point of view is the use of culturally specific metaphors and allusions. It is a great challenge dealing with a language that has a different feel and nuance embedded more in culture than in literal meaning, but this reconstruction of the translation process sheds some light on some of the linguistic and cultural issues that might be encountered in literary translation in general and from Arabic into English in particular.

The scientific translation is considered as one of the most important issues, as the world develops, new technology appears, and along with them emerge new terms to which finding an equivalent may pose a problem. As Nida (1964) said in this point; it is not easy at all to translate scientific terms that emerged in western developed countries languages into a language of third world countries which are still having financial and social problems. since scientific translation is regarded as communicative service; it certainly involves three main people: the author, the translator and the reader. He added also, that it is much more than just rendering source text language and style. Its main concern is to ensure delivering information accurately and correctly, in that it insures that the reader may use this information easily.

There are certain qualifications that a translator should have in order to accomplish a good translation of scientific texts as well as to deliver the exact information. This is because scientific translation is not just to transfer ideas or information, but rather to transfer technology and new invention that may help other countries. According to the biomedical writer Bethany Thivierge (2002:188) "The work of scientific translators is to achieve one primary goal: to write information in a clear, concise, and accurate manner". He claimed that there are nine requirements that a scientific translator should observe:
1. Work appropriate for the intended audience.
2. Respect for choices made by the author.
3. Respect for references.
4. Understanding of sciences.
5. Understanding of languages.

6. Constructive questions.
7. Work suitable for publication.
8. Familiarity with current practices.
9. Timely exchange of work.

3.1. English-Arabic Scientific Translation:

As science and technology develop, new English words used to express new concepts, techniques and inventions come into existence. These words have developed more rapidly during the last decades that dictionaries can by no means trigger off. This development has brought to Arabic serious linguistic problems of expressing this ever–expanding wave of newly–founded concepts and techniques for which no equivalents in Arabic exist. But while coinage, borrowing, transliteration and other means of transfer made for a huge bulk of English scientific terminology (e.g. Internet, I phone, I pad, etc), translating of full technical texts from English into Arabic still poses a major intellectual challenge. It is axiomatic that not all ideas or information are recorded in one single language. This stresses the paramount importance of scientific translation into Arabic. The need for this type of translation into Arabic is getting increasingly important because many Arab countries are currently undergoing a large-scale modernization process. It is interesting to note that Nida has, in his discourse on scientific translation (Nida,1964:223), pointed to this challenge. He said:

If, however, the translation of scientific texts from one language to another participating in modern cultural development is not too difficult, it is not surprising that the converse is true- that translating scientific material from a modern Indo-European language into a language largely outside the reach of Western science is extremely difficult. This is one of the really pressing problems confronting linguists in Asia today.

Translation of science from English into Arabic poses huge linguistic obstacles. One of these obstacles, yet a significant one, runs as follows: Translation of scientific terms is considered by Al-Hassnawi (2010) as a real *intellectual challenge*. It requires skills, intelligence, and mastery of both English and Arabic.

Arabic suffers a serious shortage of vocabulary that covers the fields of technology and science; therefore, translators should

consider this problem before anything else. Moreover, Esmail Seiny (1985) mentioned that Krollman(1978) stated that terminology is responsible for 40% to 60% of the technical translator's errors, and it takes up to 50% of his precious time to set the appropriate terms. Beeston (1970: 115) explained the importance of having new terminology for the scientific field as:

The need for a large new vocabulary dealing with technological and scientific matters is, however, the least interesting feature of the new lexical development; more fascinating, though more elusive, is the evolution of new words for intellectual concepts.

Thus, scientific translation has become a crucial step towards the acquisition of new technologies and spread of technology all over the world, hence, the coinage of new scientific vocabulary is seriously required to enrich the Arabic language.

The cross-cultural recognized terms do not impose serious translation problems. The equivalents for this type are easily achieved since the cultural gap between source language and target language is smaller, no difficulties will arise. The only aspect that should be necessarily considered by the translator is the coinage of new terms that correspond to the phonological and morphological rules of the target language. Yowell and Lataiwish (2000:126) added: "The condition for a successful term is that it is accepted by the user of the language and thus it gradually becomes established."

In reviewing some aspects concerning translation and scientific translation, there are numerous translation strategies that are involved in translation process. Terminology is considered to be a serious obstacle in translation scientific terms from English language into Arabic; the translator should acquire a mastery of the two languages and a wide background knowledge, which may help in choosing the appropriate translation technique in order to ensure the accurate rendering of the English terms. This distinction has one significant implication for the translator of scientific texts: he has to possess some knowledge of the subject-matter of the text he is working on, over the rest of the pre-requisites which he shares with translators of other text types. However, certain rules which are applicable to theories of literary translation can be safely applied to scientific translation in general and to English-Arabic scientific translation in particular.

In this regard, Farghal and Shunnaq (1999:210) state that "the major problem facing translators at present is terminology standardization and dissemination in the sphere of science and technology". "When it comes to Arabic", they continue, "scientific discourse is a translation activity, as Arabic is usually a target language, and creation and reasoning are done in another language".

Finally, there have been great efforts to bring new technical terms into Arabic, by any means available, yet these methods should not threaten the Arabic identity. Translators should consider the linguistic differences between English and Arabic, for that they need to coin terms that are linguistically suitable to Arabic.

In contrast to their literary counterparts, scientific texts underline the information content without bothering about features that are characteristic of poetic texts, such as rhyme, and connotative or symbolic meaning ,let alone other aesthetically features, which Schmidt (1971: 59) has defined as "polyfunctionality." Having these characteristic features of the scientific texts in mind, one could identify the areas of contrast between scientific texts and other types of texts.

4. Scientific versus Literary Contexts:

By setting off scientific against literary translation, their characteristics and the problems that are likely to be encountered in each, become more salient as illustrated below.

The scientific context has a content which is concerned with the horizontal structure of the world while the literary context has a content which is concerned with the vertical structure of the world. Thus, on the one hand, we shall have a vertical relation between height and depth while, on the other hand, we shall have a horizontal relation between width and breadth. The first relation testifies to the relative merits of artists and poets, whereas the second one signifies the merits of scientists and technologists. The product of poets is essentially a product of height and depth which has either been brought down or lifted up so as to fit into the width and breadth of life itself that is acquiring a horizontal dimension; while the product of scientists lacks the intuitive complexity and wealth of experience characteristic of poets. This product is therefore, essentially conceived as a horizontal line corresponding

to a photographic representation of the world (Blankenburg, 1982: 35-47).

Scientists speak within the familiar and concrete realities of everyday life. If they are to move, their movement is almost always towards the accomplishment of a new horizon or new perspectives that always remain within the horizontal structure of the concrete, tangible and objective reality.

Now, it would possible to expand the differences between science and literature so as to include more important language details:

Scientific Texts	Literary Texts
- Logicality.	- Lack of argumentative progression.
- Precision.	- Vagueness.
- Reason.	- Emotion.
- Truth to particular reality.	- Truth to the ideal.
- Generalization.	- Concretion.
- Referential meaning.	- Emotive meaning.
- Denotation.	- Connotation.
- Lexical affixation.	- Grammatical affixation.
- Idiomatic expressions are rare.	- Idiomatic expressions are frequent.
- Use of abbreviation, acronym, and registers.	- Very few abbreviations, acronyms, and registers.
- Standard expressions.	- Almost all varieties.
- Use of scientific terminology, specialized items, and formulae.	- No use of scientific terminology, or formulae.
- No use of elements of figurative language.	- Extensive use of figurative language.

Close examination of the items included in the literary texts column will suggest that these items are clearly descriptive by Arabic, while the items contained in the opposite column testify to the characteristics that are relevant to English usage.

Setting off these differences against more linguistic differences that exist between English and Arabic will confirm the latter's tendency to allegory and provide guide lines for translating English scientific texts into Arabic. See below:

English	Arabic
- Words are composite.	- Words are paradigmatic.
- Only few grammatical items are compound.	The majority of grammatical items are compound.
- Rigid word order.	- Flexible word order.
- Very few inflections	- Highly inflectional.
- Uses abbreviations, acronyms, formulae, and registers.	- Rarely uses abbreviations, acronyms, formulae, and cliches.
- Narrow range of gender distinction.	- Wide range of gender distinction.
- There is clear-cut tense-aspect distinction.	- There is no clear-cut tense aspect distinction.
- There is no dative or dual.	- Contains dative and dual.
- Scientific and technical terminology covers all relevant fields.	- Shortage of scientific and technical terminology that may cover all fields.
- Archaic expressions are almost obsolete.	- Archaic expressions are still in use.
- Uses so many compound lexical structures.	- Uses few compound lexical structures.
- Metaphor and other forms of figurative language are reserved for poetic use of language and certain related fields.	- Metaphor and other forms of figurative language are very much frequent even in Modern Standard Arabic.
- Adverbs are mostly formed by the affixation of (ly) to adjectives.	- Adverbs are formed by prepositional premodification of nouns and adjectives; English prepositions such as before, after, above, over, below, under, behind, and between are adverbs in Arabic.
- Capitalization is sometimes used for semantic implication e.g. Mosaic, Nativity…. etc.	- Does not use any form of capitalization.

- Does not use vocalization.	- Vocalization has a semantic function.
- Punctuation has a bearing on the interpretation of texts.	- Punctuation has little bearing, if any, on the interpretation of texts.
- A part from such suffixes as (-ling and -ette) there is no paradigmatic diminutive in English.	- Paradigmatic diminutive exists.
- It has no diglossia.	- Diglossia exists.
- There are about twenty configurations of vowel sounds.	- Few vowel sounds used mainly in vocalization.
- There are no pharyngeal or glottal sounds except in the aspirated (H) and the colloquial glottal stop.	- Pharyngeal and glottal sounds are among the standard phonemes in Arabic.

Since scientific texts rarely contain idiomatic or culture-bound expressions, the type of equivalence most common in their translation is the **formal equivalence** which focuses attention on the message content itself rather than its form. Nida (1964: 223) highlights this aspect of scientific translation as follows:

This level of language, experientially is lifeless, is linguistically very manipulatable. For to the extent that language can be separated from the unique qualities of experience and can be made a kind of linguistic mathematics, its units can easily be arranged and re-arranged with little interference from the cultural context.

It emerges from the above-mentioned comparison between English and Arabic, which drastically lack scientific and technical terminology, suffers an irreversible process of disintegration through diglossia, and harbors scanty abbreviations, acronyms, formulae and registers. But since science and technology create situational features which involve new concepts, techniques, and processes that can be imitated and imagined, it is binding for Arab translators to coin equivalent terminology and develop corresponding programs of expression which Arabic morphology

and flexible word order can provide. However, theoretical possibilities may in many cases fall short of practical application and this is very much the case with English technical translating into Modern Standard Arabic today. It becomes obvious from the discussion presented so far that the act of scientific translation is sometimes guided by certain strategies. One of these strategies accounts for the systematic differences between the two languages concerned. Another depends on the type of language used in any individual text. Both these strategies are applicable in translating English scientific texts into Arabic.

Another point is that Arabic, in its current situation, does gravely lack a frame-of-reference in the scientific and literature, and what is available of translated literature to this effect in Arabic is rather scanty and harbours gaps that are likely to multiply since initiative has not been taken by the Arabs to adopt and sustain a large-scale translating process in this particular.

English language expresses a highly sophisticated technological culture, whereas Arabic, is the expression of poetic culture. Thus, translating English scientific texts into Arabic will inescapably involve a process of transferring dynamic and multidimensional human experience into a static and mono-dimensional one whose verbal system can hardly provide for such a transfer. As the Arab culture is being profoundly modified and modern technology is being increasingly introduced, new technical terms are being adopted as well. But these terms are predominantly a mixture of transliterations and borrowing. However, these terms, regardless of their readiness to catch up with Arabic paradigmatic moulds, can by no means encompass the whole body of English technical and scientific literature.

Finally, in this situation which is rather difficult if not entirely hopeless, it seems imperative for the Arabs to start a serious and large scale process of Arabization. Yet, this process cannot be affected overnight. It necessitates an exceptionally high energy, good-will and objective thinking on the Arabs' part to span and assimilate what the west has spanned and assimilated since the Renaissance.

Conclusion:

To conclude, literary and scientific texts belong to two different text-type: Scientific, which is informative and literary, which is expressive.

Scientific translation is not impossible, yet it is not easy though translation is not a perfect rendering of all aspects of source language material. In spite of the prominent efforts and distinguished works of translation, there is a severe lack in the translation of scientific knowledge, information, and production because of the unavailability of scientific material while there are plenty of literary, religious, historic, traditional and juristic productions.

Recommendation:

It is urgent to utilize information technologies so as to increase knowledge and information production due to its weakness while the foreign one is dominating nowadays. More concern, financially and laboriously should be paid to scientific translation in order to have good intercommunication. What is needed now is to enhance the scientific status maintaining good education and conveying science innovations and various information by scientific procedures pursuing the means of Islamic culture which flourished basically by the colossal scientific movement of translation as well as the movement of translation in Europe which led to the renaissance.

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سمات الترجمة العلمية مقارنة بالأدبية
بالإشارة إلى اللغة الانكليزية والعربية

المستخلص

لقد غدت الترجمة العلمية من اللغة الانكليزية إلى اللغة العربية أو بالعكس إحدى أهم المواضيع التي تستقطب الاهتمام في وقتنا الحالي. فمازالت عملية ترجمة احد النصوص التقنية من أو إلى العربية تشكل احد أهم التحديات الذهنية للمترجم. وهذا هو ما يوضح مدى الأهمية الكبرى للترجمة العلمية. إن الأهمية المتزايدة لهذا النوع من الترجمة تتأتى من حقيقية كون أن الدول العربية تمر حالياً بعملية عصرنه وعلى نطاق واسع. بالإضافة إلى كون أن اللغة العربية تعاني من نقص كبير في المفردات التي يتم استخدامها في مجالات العلم و التكنولوجيا. وعليه فعلى المترجمين أن يولوا الاعتبار لهذه المشكلة قبل أي شيء أخر. سوف يسلط هذا البحث الضوء على المشاكل التي يمكن أن يواجهها المترجم أثناء الترجمة العلمية بين اللغتين العربية والانكليزية. ومن ثم يحاول أن يوجد عوامل مساعدة معينة يمكن أن تؤدي إلى إيجاد نظرية محددة لترجمة هذا النوع من أنواع الترجمة. كما وان البحث سوف يبين الاختلافات الجوهرية الموجودة بين النص العلمي والنص الأدبي في اللغتين العربية والانكليزية.