

Can machine translation substitute human translators?

Abdelhalim Farouk LAIDI , Mohamed BOUDIAF university - M'sila, Algeria,
abdelhalimfarouk.laidi@univ-msila.dz

Send Article Date: 2024-08-05

Date of acceptance of the article 2024-11-27

Abstract:

The opposition between human translation and machine translation refers first of all to the accepting of the latter before any comparison between the both. They are two different operations in terms of process, cost and result, one is based on the functioning of the machine and its programs, the second on the mental processes of human translators, but they share the same principle of transferring a text from a source language to a target language, where the unit of meaning occupies a very important notion for both. By the present paper, we want through a descriptive approach and many examples, to give answers to the following questions: What are the contributions and the limits of machine translation? Can machine translation substitute effectively human translators? Or do the two operations remain complementary and interspersed in the sense of making easier the task of the translator?

key words: human/machine translation, differences, similarities, human translation primacy.

Introduction:

Machine translation is a process by which a computer produces the first translation of a text with or without human assistance. It seems therefore reasonable that a computer translation system could translate a text in a completely automatic manner; once the relevant lexicons have been developed and the respective rules of morphology and syntax placed in the memory of a computer, and machines would be able to carry out the conversion of one language into another.¹

Information and Communication Technologies (ICT) such as computers and mobile phones, informatic softwares and multimedia tools, operating with or

¹ Lederer, M. *Translation: The interpretive model*. translated by Ninon Larché, 2014. Routledge, USA, 1994, p.181
1872

without network, take day by day a large part of human beings daily life, and translators are not excluded. In fact, translation as a human activity is today inseparable from the machine, whether through machine translations that must be reviewed by a human professional or through machine-aided human translations. The best example is the success of the translation service “Google Translate” which produces more or less exploitable translations.

Machine translation concerns only the so called pragmatic texts, « Most translation in the world is not of texts which have high literary and cultural status. The great majority of professional translators are employed to satisfy the huge and growing demand for translations of scientific and technical documents, commercial and business transactions, administrative memoranda, legal documentation, instruction manuals, agricultural and medical text books, industrial patents, publicity leaflets, newspaper reports, etc. » (Hutchins & Somers, 1992, p.2)

The translation of literary works should remain a human task, machines are unable to understand hidden intentions (the unsaid meanings) for linguistic subtleties of literary language, the function of these texts, and above all the stylistic or language registers, emotional and feeling values, connotations and imagination that interferes. We suppose that translating this type of text remains therefore the craft of human translators who possess the skills conferred to them by their innate intelligence to render artistic works correctly.

Through this paper, we aim to explain the concept of machine translation and its different modes of use, to highlight the similarities and differences between machine translation and human translation, to indicate whether machine translation however the obstacles it faces is really capable to substitute human translators, and to show up how research and development nowadays in the field converges towards a cooperation between human translators and the machine before, during and after the translation process, in the aim to make translation more accessible, cheaper, less demanding in terms of time and effort, of a better quality.

THE FIRST TOPIC : AN HISTORICAL OVERVIEW OF MACHINE TRANSLATION

Early attempts placed translation in the same category as decoding enemy messages during World War II. The first computers were exclusively in the hands of the army, a decoding was a major counterintelligence activity. From the repeated successes in breaking the codes of enemy messages, it came to mind that foreign languages could be considered as coded messages whose translation could be undertaken along the same principle as the decoding of enemy codes. The Two operations seemed necessary to provide the expected results: replacing the words in a text with the corresponding words, then restoring the syntax in the target

language. A foreign language would thus be “decoded” from one language then “encoded” into another. From this particular concept of machine translation, we still find terms such as "coding", "decoding" and "encoding" in standard translation terminology today.¹

From the 1950s, the need for translation increased, this is mainly due to the internationalization of economic and cultural exchanges after the Second World War. Thus UNESCO, which deals with many works of universal culture, encountered a problem with translation times. She then claimed to benefit from the facilities offered by electronic calculators, but she still had to wait to materialize this idea because many problems discredited this technique. During the Cold War, the United States and the USSR concentrated their respective efforts to develop machine translation. In 1954 in the United States, Doster and Gravin of Georgetown University with Sheridam of the IBM company carried out the first experiments in automatic translation from Russian into English using the IBM/70 calculator. In 1955 in the USSR, the large calculator of the Mechanical Institute of Precision and Calculation Technique would lead to the possibility of automatic translation. Since, studies keep on within translation between different languages field, and gradually succeed in resolving some problems that face machine translation.²

As the demand for translations increases, the newly incriminated computer was seen as a tool offering new insights because of its speed. As the computer worked faster than humans, the idea of machine translation (by computers) would be a way to handle huge volumes of translations. Since the 1990s, translation as a commercial activity has become a global business. The rapid expansion of the internet has been a major factor in allowing even smaller companies to market and sell their products internationally. And the demand from consumers for product information, software, user manuals, games, educational materials and so on in their own language has fuelled in its turn the demand for translation.³

THE SECOND TOPIC : MACHINE TRANSLATION IN USE

The term «Machine Translation (MT) is the now traditional and standard name for computerized systems responsible for the production of translations from

¹ Lederer, *ibid*, p. 180.

² SANADA, Akiyo. *Ecole Nationale Supérieure des Sciences de l'Information et des Bibliothèques. Les systèmes de traduction automatique*. 1995, p.9

³ Hartley, Tony. *Technology and translation*, in Jeremy Munday (Ed) *The Routledge Companion to Translation Studies*, Routledge, New York, 2009, p.106

one natural language into another, with or without human assistance ... It does, however, include systems in which translators or other users assist computers in the production of translations, including various combinations of text preparation, on-line interactions and subsequent revisions of output».¹

But the term Computer-Aided Translation (CAT) «refers to a translation modus operandi in which human translation is aided by computer applications. A competing term, Machine-aided Translation (MAT), is also in use, particularly within the software community involved in developing CAT applications.»²

Hutchins and Somers draw up a clear picture in a given diagram of translation operations which range from fully automatic machine translation to human translation, and two intermediary modes: The first is Machine-Aided Human Translation (MAHT), the second is Human-Aided Machine Translation (HAMT). They stated that Computer-Aided Translation today covers all types of translation automation techniques. MAHT includes the use of computer-based tools as aids for professional translators, whereas, HAMT covers the use of machine translation systems to produce translations with the assistance of human operators before, during and after the computerized processes.³

FIRST REQUIREMENT: FULLY AUTOMATIC MACHINE TRANSLATION

Fully automatic machine translation is the first notion in the automation of the full translation process and its central core. Through a translation system, all texts are translated in a fully automatic manner, that is to say there is no human intervention between the input source language and the output target language. This type of translation can also be done by word-for-word translation, using a lower level system. When the machine translates from French to English, for example, you enter "livre" and it outputs "book". With this system we can only translate very simple sentences.⁴

Today, machine translation is limited to technical or document of instructions including a big number of specific terms (lexical items which have specialized reference within a particular subject domain). The famous ALPAC (Automatic Language Processing Advisory Committee) report (1966) marked the end of the first hopes for translations entirely fulfilled by machine. It becomes

¹ Hutchins, J & Somers, H. *An introduction to machine translation*. London : Academic press limited, 1992, p.3

² O'hagan, Minako. *Computer-aided translation (CAT)* in Mona Baker and Gabriela Saldanha (Ed) Routledge encyclopedia of translation studies, Routledge, London and New York, 1998, p.48

³ Hutchins & Somers, op.cit, p. 147

⁴ Akiyo SANADA, op.cit, p.10

clear that the computer could not correctly translate a language for many and various problems linked to ambiguity and syntactic reorganization, so that it was impossible to establish correct correspondences between the sentences of two languages, adding to real world knowledge and contextual knowledge obstacles.¹ The arguments against fully automatic machine translation were that translation involved certain human abilities which no computer can possess.

SECOND REQUIREMENT: MACHINE-AIDED HUMAN TRANSLATION- MAHT

In this methodology, it is the man who translates using the machine. Any kind of aid given by computers to translators is regarded as MAHT, it can be a computer based linguistic aid such as program checking spelling, grammar or style of the translation, or automatic dictionaries, encyclopedias and all on- line reference or other general sources which the translator may consult.² In this mode of use, «the machine has thus become the human translator's auxiliary, a tool in the form of personal computers offering word processing programs and allowing access to terminological data banks.»³

Herbulot (1983) drew the attention of professional translators to several important stages of the translation process carried out thanks to computers help:

a- Documentary research: To reduce time and effort in research in documentation centers related to the subject of research.

b- Terminological research: to obtain from word banks the translation of terms (but not in isolation, without any indication of the context or field of use).

c- Translation proper: The machine is not asked to choose but to draw up an index, to sort alphabetically the hundreds of terms found in the glossaries of large publications, to translate set phrases, clichés or proverbs we have put into its memory.⁴

Nowadays, lot of people especially translators use one or other of the facilities offered by computers, theses various resources are generally known as the translator's workbench (or translator station).

¹ Lederer, op.cit, p. 182

² Hutchins & Somers, op.cit, p. 149

³ Lederer, op.cit, p. 202

⁴ Herbulot, *TAO : pour un essai de définition*, Paris: Traduire 114, 1983, p.68

THIRD REQUIREMENT: HUMAN-AIDED MACHINE TRANSLATION - HAMT

In this process, «it is the system which takes the main responsibility for translation with human assistance to help in the process ... Human involvement may be during the process, in an ‘interactive mode’, or outside the process, in ‘pre-editing’ or ‘post-editing’ stages.»¹ It means that the human translator feeds the additional information to fill the computer program and to prevent it to produce ambiguities; they will be limited to narrow semantic domains and limited syntactic structures thanks to human pre-editing which will prepare the path for machine translation to operate relatively smoothly and economically. It is therefore up to man to complete the text to have the final product.²

This mode of translation supposes, according to Lederer (1994), the intervention of the human translator who can provide the information required by the computer program in three different ways: by preparing the source text, by editing the target text or through what is called an interactive process.

a- Pre-editing: By preparation of the source text we mean the modification of the text to make it accessible to automatic translation and resolve the difficulties it will pose for the machine. Identifying for example proper nouns, marking the grammar issues, category of homographs, indicate subordinate phrases, insertion of words unknown to the program in the glossary, etc. Pre-editing can sometimes extend to a complete reformulation of the source text using an accessible language for the machine in order to simplify sentence structures and related vocabulary.

b- Post-editing: post-editing task is to correct output imperfection from the machine to an acceptable standard. Is more or less elaborated and depends on the target audience. Revision is less when a text should simply provide information to readers familiar with the subject matter; it is more when the text is aimed to a larger public.

When the revision needs to be meticulous, translators modify the text produced by the program on the screen: sentence structure, word order and number are changed, terms and pieces of sentences which have not been transcribed by the machine are translated, inappropriate words are replaced by more appropriate ones.

c- Man-Machine Interaction: In this mode, the human translator reacts to questions which appear on the screen when the translation program cannot interpret certain structures or choose the correct lexical item from a choice of several words.³

¹ Hutchins & Somers, op.cit, p. 150

² Akiyo SANADA, op.cit, p. 10

³ Lederer, op.cit, pp. 183-184

THIRD TOPIC: DIFFERENCES AND SIMILARITIES BETWEEN MACHINE TRANSLATION/HUMAN TRANSLATION

Far from the details of complex computer systems dedicated to machine translation, we draw up a contrasting table stating the constituent elements of the human linguistic system and the computer linguistic system.

Table 1 : Elements of human linguistic system/computer linguistic system

Computer Linguistic System	Human Linguistic System
Material device (hardware)	Human brain
Input/Output	Hearing perception/expression
Operational mode	Language grammatical rules
Use of artificial memory	Use of human memory
Programming language	Linguistic styles (scientific language, imaginative language,
Database	Encyclopedic dictionary
Applications	Language use

Source : Mounaim Sana¹

From this table, rise the similarities and the differences that exist between machine translation and human translation. Relevant differences are noticeable mainly in the translation process of each operation, in the manner man and computer interacts with language. The human being is unique in his distinctive mental abilities such as his ability in acquiring knowledge, understanding, thinking, analyzing and imagining, added to his creativity skills. The computer is distinguished from humans by its integrated memory which can store millions of words, linguistic structures and texts in several languages. It also stands out for its huge capacity for arranging data, and its high speed of execution of various operations such as translation.

According to Lederer (1994), comparing machine translation and human translation processes shows the following differences and similarities.

¹ منعم، سناء. اللسانيات الحاسوبية والترجمة الآلية: مابين الثوابت النظرية والإجرائية. عالم الكتب الحديث للنشر والتوزيع، 2015، ص 81

Firstly: Differences

Differences between machine translation and human translation are observable in:

a- The lexical thesaurus of humans: The lexical knowledge of humans depends on their level of education, their professional activity, their interest in languages, etc. Translators, who work with words as do authors, know more or less ten thousand words with the meanings and nuances of meanings of these words has been learnt in context or through texts. This means that they know more or less as much as a computer program's basic vocabulary.

The situation is different for a machine translation program which must work through all the possible meanings it has been given for each word in order to find, from among them, the one which needs to be transcoded in a given sentence.

b- The lexical ambiguities of the machine:

Lexical ambiguities, where one word can be interpreted in more than one way, belong to one of three categories: grammatical, homographic and of transfer.

- **Grammatical ambiguity:** This category is made up of words whose form does not indicate which particular grammatical category it belongs to. A given word may be assigned to more than one grammatical or syntactic category (e.g. noun, verb or adjective) according to the context. The problems increase when several categorically ambiguous words occur in the same sentence.

The machine undertakes to resolve the ambiguity from rich semantic potential, the human mind integrates the sentence's semanticism into its real world knowledge.

- **Ambiguities due to homography:**

In this case, lexical ambiguity occurs when a word can have two or more different meanings, especially in homographs and polysemes. For humans, the immediate verbal context plays an important role in the attribution of the grammatical category and in the actualization of relevant meanings. The machine would need explanations on the grammatical categories of the words.

c- Deverbalization, a human phenomenon

Deverbalization is phenomenon of language use and of memory which is strictly human. (the second main stage in grasping meanings within the interpretative theory of translation). Translator consciously seeks correspondences for words, or the words which are taken together to make up the linguistic units of sense. The machine can only treat the text by means of correspondences.

d- The immediate perception of sense in humans:

The machine operates sentence by sentence. Translators also give the impression of translating sentence by sentence but, in fact, their eyes do not follow the unfolding of a text word by word. Humans understanding of syntactic structures

has become instinctive. Sentences do not require a conscious analysis but always call up cognitive inputs to give rise to hypotheses of sense. The procedures set up in computer programs are needed because machines cannot call on any non-verbal knowledge to interpret segments of texts.¹

Secondly: Similarities

It seems that the two methodologies have in common, at the operational level, the information input and output acts, the processing of this information and its storage at the level of memory units. Machine translation and human translation have in common the following characteristics:

a- Networks and sub-languages:

In the memory, there are networks of lexical correspondences (types of bilingual semantic fields) in which the use of one term activates the whole network. These networks are analogous to groupings known as sub-languages in computers. In this regard, there is a convergence between the working of the human brain and the classification by thematic mini-glossaries. Everything happens as if the human brain also categorized its lexicon in similar fashion, grouping words by field of use.

b- Transcoding :

Transcoding consists on finding a corresponding term in the other language as soon as their field of use is defined, even its polysemic character. These correspondences are known, or can be known, independently of the texts in which they appear. Machine translation handles terms with ease, it shows the advantages human translation can draw from the machine's capacity for transcoding.

c- Transfer ambiguities:

We have to be aware that certain words which in one's own language seem to have a single meaning are actualized in texts in such a way that they require different translations. A word appearing to have a single meaning proves to be polysemic when it must be translated. Polysemy is a phenomenon which concerns human translation as well as machine translation. The temptation of the former is always to use the most frequent correspondence; the difficulty for the latter is due to the fact that an analysis of the source language does not detect this polysemy.²

FOURTH TOPIC: ARGUMENTS FOR HUMAN TRANSLATION PRIMACY

It appears that machine translation, despite the artificial intelligence progress, remains affected by clear imperfections affecting its credibility.

¹ Lederer, op.cit, pp.189-193

² Lederer, ibid, p. 195

However, machines cannot produce complete and accurate translations for the reason that the most advanced software does not possess the skills of a professional translator. Below, we draw up the main arguments that justify the advantage and primacy of human translation: Divergences of languages, concept of context, mother tongue mastery, encyclopedic knowledge, creativity, and cultural dimension.¹

We also give some short texts “Google Translate” outputs examples from English into Arabic compared to our own translation (far from to be an idealistic human translation).

a- Divergences of languages

Whereas lexical ambiguities involve problems of analysing individual words and transferring their meanings, structural ambiguity involves problems with the syntactic structures of sentences. Ambiguity arises when there is more than one way of analysing the structure of a sentence according to the grammar used in the system. The majority of machine translation systems are restricted to the sequential analysis of single sentences; they do not generally deal with larger units of translation such as paragraphs. (Hutchins & Somers, op.cit, p.88)

Translation in certain situations such as the translation of proper nouns, abbreviations, specific terminology, gender (feminine words can be masculine in another language), number (singular and plural, the duality المثنى seems a singular form in the Arabic language), and some features of the ways in which sentences are linked (pronouns). If the grammar does not make distinctions which a human reader would make, then the system will not be able to decide between alternative analyses. The human translator can overcome structural ambiguity by using his skills, his linguistic and extra-linguistic knowledge, in the given context which aids him to understand the source message, so that he will be able to make correct translation choices.

Example of lexical ambiguity:

Source text: « The department of linguistics offers the study of the science of language through approaches that combine linguistic theory and empirical areas.»

Google translate version :

«يُقدم قسم اللغويات دراسة علم اللغة من خلال مناهج تجمع بين النظرية اللغوية والمجالات التجريبية.»

Comment:

The verb «offers» conversion into Arabic through Google translate carries out the verb «يُقدم» which does not express the right meaning, this way the sentence is

¹ FABRICE. Cultures Connection. *Traduction automatique : pourquoi les machines ne remplaceront-elles jamais les traducteurs humains ?* Disponible sur <https://culturesconnection.com/fr/tr>

not meaningful. At the opposite when we use the verb «يُنَيِّح», ambiguity is put away.

Our translation :

«يُنَيِّح قسم اللسانيات دراسة علم اللغة وفق مقاربات تجمع بين النظرية اللغوية والمجالات التجريبية.»

b- Concept of context:

Context is of paramount importance to grasp meanings of the texts to be translated, because the human mind adds cognitive contributions (real world knowledge and contextual knowledge which make up extra-linguistic knowledge) to the semantics of sentences, to eradicate lexical or syntactic ambiguities. Programmers know that contextual knowledge can reduce ambiguity, but simulating this process in a machine would require extremely difficult formalization extra-linguistic elements.

Hutchins and Somers (1992) stated:

it was also stated that very few MT systems are able to make use of such contextual knowledge for precisely the reason that there is no hard and fast rule about where to look for the piece of 'knowledge' which will help disambiguate in a particular case. (p. 92)

Example of context meaning understanding:

Source text: «University education stimulates the development of many polyvalent skills valuable in the job market. »

Google translate version :

«يحفز التعليم الجامعي تطوير العديد من المهارات المتعددة القيمة في سوق العمل.»

Comment:

Lexicons such as « development- valuable » seems to be problematic in machine translation: (القيمة - تطوير). The correspondent carried out in Arabic through Google translate to the word «valuable» is «القيمة» which in this context does not faithfully express the aimed meaning, this way the sentence is ambiguous. Instead, when we adapt our choice by analyzing the context, we limit our decision to the word «المطلوبة» which express the contextual meaning that fulfills the right translation, so that the sentence will be meaningful.

Our translation :

«يُساعد التكوين الجامعي على اكتساب عديد الكفاءات المختلفة المطلوبة في سوق العمل.»

c- Mother tongue mastery

Professional human translators will only translate into their native language. In doing so, the translator will be able to adjust the style of the text so as to reproduce the tone, meaning and nuances of that language. A high-quality human translation should never seem like a translation. It has been claimed that even

today's most advanced software cannot master a language as well as a native speaker.

Example of reformulation and reorganization:

Source text: « More than half of what we communicate is communicated not through words but through body language. It refers to non- verbal elements of communication used to modify meaning and convey emotion.»

Google translate version :

«أكثر من نصف ما نتواصل به لا يتم توصيله من خلال الكلمات بل من خلال لغة الجسد. ويشير إلى عناصر الاتصال غير اللفظية المستخدمة لتعديل المعنى ونقل المشاعر.»

Comment:

The translated sentence even somehow correct, shows an inadequate lexicon choice and structure organization. Our translation is an attempt to faithfully reorganize words and structure so that it does not look like a translation, but a readable text as if it was written first in the target language.

Our translation :

«لا يتواصل الإنسان مع غيره بواسطة الكلام الملفوظ فحسب، بل غالبا ما يتم ذلك بلغة الجسد، إذ هي تلك العناصر غير اللفظية التي تستعمل في عملية التواصل بغرض تغيير المعنى أو إيصال العواطف.»

d- Encyclopedic knowledge

The translation of scientific texts focuses on the transfer of information; it often requires specialized human translators. Meaning can sometimes be a challenge that involves great effort in translating technical, scientific or legal documents by human translators who are supposed to have relevant skills and experience to be sure that all specific details of the subject matter have been perfectly preserved in the translated version, while machine translation will not be able to meticulously follow the same path. The risk to see confusion or errors in the final translation exists therefore.

Example of encyclopedic terminology mastery:

Source text: « Students can expect to receive solid training in such basic areas as phonetics, phonology, morphology, syntax and semantics, all of which constitute the field of Formal Linguistics.»

Google translate version :

«يمكن للطلاب أن يتوقعوا تلقي تدريب قوي في مجالات أساسية مثل الصوتيات، وعلم الأصوات، والصرف، وبناء الجملة وعلم الدلالة، والتي تشكل جميعها مجال علم اللغة الرسمي.»

Comment:

Adding to some imperfections in translating the sentence, the source text includes terms specific to linguistics field which needs an encyclopedic knowledge. The machine seems to lack the correspondent terms to «phonology» and «Formal Linguistics». The right terms are «علم الأصوات الوظيفي» instead of «علم الأصوات»

which refers to «phonetics - الصوتيات», and «اللسانيات الشكلية» instead of «علم اللغة», which create confusion and ambiguity.

Our translation :

«يمكن للطلبة أن يتطلعوا إلى تلقي تكوين نوعي في مثل هذه المجالات الأساسية، على غرار علم الأصوات وعلم الأصوات الوظيفي وعلم الصرف وعلم التراكيب وعلم الدلالة، والتي تشكل جميعها مجال اللسانيات الشكلية.»

e- Creativity

Machine translation tools, which are robots programmed by humans, do not have the capacity to be creative. The translated version will appear only as a literal translation, word for word, of the original text. But professional translators are qualified writers with experience in developing well-written texts in a language they master. If no exact translation is available, an experienced human translator will naturally use its creative skills to find the most relevant and appropriate phrase or phrases to convey the intended meaning.

Example of reformulation and creativity:

1- Source text: « educated and eloquent people, with a large knowledge in many different subjects, are more likely to be promoted than people who have a more restricted vocabulary».

Google translate version :

«الأشخاص المتعلمون والبلاغة، الذين لديهم معرفة كبيرة في العديد من المواضيع المختلفة، هم أكثر عرضة للترقية من الأشخاص الذين لديهم مفردات أكثر تقييداً» .

Comment:

The source text is a complex sentence with a style and language forms specific to English. Given that each language has its genius, the word for word translation or sentence by sentence is impossible. We propose a translation in which we grasp the meaning of this sentence and we try to reformulate it in our own style to avoid inadequacies in terms of lexicon choice and structure organization. Our translation is an attempt to faithfully rewrite the sentence so that it does not look like a translation, but a readable text as if it was written first in the target language.

Our translation :

«المتفنون وأهل الفصاحة ذووا المعارف الواسعة في شتى مجالات الحياة، هم أكثر حظاً في الترقية ممن لا يملكون من الزاد اللغوي إلا القليل.»

2- Source text: « The Babylonians wanted to make a name for them by building a mighty city and a [tower](#) “with its top in the heavens.” If they reached heaven, they could understand all the secrets of the world.»

Google translate version :

« أراد البابليون أن يصنعوا اسما لأنفسهم ببناء مدينة عظيمة وبرجا «رأسه في السماء». ولو وصلوا إلى السماء لأمكنهم أن يفهموا كل أسرار العالم.»

Comment:

The same thing for this text, for which we propose a translation by reformulating the meaning in specific Arabic language and appropriate style.

Our translation :

« أراد أهل بابل أن يُخلّدوا أثرهم ببناء مدينة عظيمة وبرجا يمتدّ إلى ما وراء السماء، رغبة منهم في فهم أسرار العالم.»

f- Cultural dimension

It is well known that the translator must own both linguistic skills and cultural skills. Cultures and traditions, as complex as languages, are specific to each society around the world and vary considerably. A human translator will be able to understand the meanings thanks to cultural elements reference linguistically conveyed, he is also called to convey strange characteristics to his culture, to explain them or adapt them in his mother tongue to ensure that they will be understandable, culturally acceptable and appropriate for the target audience, conversely to the automatic translator which could not do so.

Example of cultural clue:

1- Source text: « The Wisdom of Solomon: Two women came to King Solomon with two little babies,»

Google translate version :

«حكمة سليمان: أتت امرأتان إلى الملك سليمان ومعهما طفلان صغيران،»

Comment:

The source text is a story from the Bible, which relates that King Solomon was king in Israel for forty years during the tenth century B.C. But monolingual arabic muslim reader does not recognize this king because Salomon is a prophet in his culture and his religion. For this, translation should be adapted in order to avoid ambiguity and misunderstanding (and even if the story exists in the both cultures).

Our translation :

«حكمة سيدنا سليمان: جاءت امرأتان إلى سيدنا سليمان ومعهما طفلان صغيران،»

2- Source text: « reading spiritual texts can lower blood pressure and induce feelings of calm.»

Google translate version :

«قراءة النصوص الروحية يمكن أن تخفض ضغط الدم وتثير مشاعر الهدوء.»

Comment:

The expression «spiritual texts» in the source text create confusion for monolingual arabic muslim reader who may not understand its meaning if it is translated by « النصوص الروحية » because this statement does not exist in arabic

culture. Spiritual texts are the sacred texts or religious texts. To put away this equivocation, we should adapt the expression so that it would be understandable.

Our translation :

« من فضائل مطالعة الكتب الدينية أنها تُخفف مستوى ضغط الدم وتُثير الشعور بالهدوء. »

Conclusion:

Artificial intelligence has seen considerable progress in recent years, it contributes effectively to the development of tools and machines within the field of languages. In the same way, machine translation software was developed with the aim of providing a quick solution to translation problems. However, automatically translated texts are not as accurate as human translations, translation programs are just man-made systems of information.

Given the constraints already mentioned such as the notion of ambiguity, context, extra-linguistic knowledge, creativity, etc... the fully machine translation keep limited to identify correspondences between the original texts and previously translated texts, and tend to propose lexical and grammatical translations which can alter the aimed meaning. For these reasons, we can understand and accept why machines could not replace human translators.

However, we cannot deny the contribution of machine translation because of its defects and inadequacies, but it is worth to remember that machine translation and human translation are complementary and must be juxtaposed in the way that one should not cancel out the other. Artificial intelligence tools are designed to provide valuable, rapid and free help for human translators who are just called upon to revise and correct machine translations for the sake of linguistic reliability in terms of meanings, structures and style, for a better needed result. For this reasons, the main efforts in machine translation researches should be directed to the more realistic aims of human-aided machine translation (HAMT), because translation involved certain human abilities which no computer can possess.

We need hardly mention that translation tools based on artificial intelligence are day by day more sophisticated, it would be possible in the near future to compare machine translation to human translation, and machines would be more efficient than human translators in rendering a text from a source language to a target language thanks to technology advancement.

BIBLIOGRAPHY LIST:

BOOKS :

منعم، سناء. اللسانيات الحاسوبية والترجمة الآلية: بين الثوابت النظرية والإجرائية. عالم الكتب الحديث للنشر والتوزيع، 2015

HARTLEY, Tony. *Technology and translation*, in Jeremy Munday (Ed) *The Routledge Companion to Translation Studies*, Routledge, New York, 2009

HERBULOT, F. 'TAO : pour un essai de définition', Paris: *Traduire* 114, 1983

HUTCHINS, J & SOMERS, H. *An introduction to machine translation*. London : Academic press limited, 1992

LEDERER, M. *Translation: The interpretive model*. translated by Ninon Larché, 2014
Routledge, USA, 1994

O'HAGAN Minako. *Computer-aided translation (CAT)* in Mona Baker and Gabriela Saldanha (Ed) *Routledge encyclopedia of translation studies*, Routledge, London and New York, 1998

- WEBSITES:

SANADA, Akiyo. Ecole Nationale Supérieure des Sciences de l'Information et des Bibliothèques. *Les systèmes de traduction automatique*. 1995. Disponible sur <https://www.enssib.fr/bibliotheque-numerique/documents/61355-les-systemes-de-traduction-automatique.pdf> [consulted on 07/09/2022].

FABRICE. Cultures Connection. *Traduction automatique : pourquoi les machines ne remplaceront-elles jamais les traducteurs humains ?* Disponible sur <https://culturesconnection.com/fr/traduction-automatique-pourquoi-les-machines-ne-remplaceront-elles-jamais-les-traducteurs-humains/> [consulted on 19/11/2022].