

The Effectiveness of Machine Translation

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Abstract: *Insofar as machine translation is based on computerized natural language processing techniques, it still subscribes to the popular notion that the best translations are not simple word-for-word translations. Consequently, approaches to translation both by humans as well as machines face the same difficulties. The need for analyzing structural similarities between natural languages (e.g., English and Arabic), going beyond the surface structure to analyze the core meaning and translate concepts into other languages, among other things, still holds*

This paper maps out the pros and cons of machine translation in dealing with problems of contextuality, culture-bound expressions, lexical and structural ambiguity, and idiomatic expressions. The paper concludes that while considering machine translation a step in the right direction, it is premature to announce the birth of a full-fledged and independent approach to translation which can replace human translators. Even by capturing word expressions and building a database of translation phrases, computers cannot perform so well as human translators in most types of translation, despite the computer's ability to save time, cost and effort.

1. Introduction

The European Association for Machine Translation (EAMT) defines machine translation as "the application of computers to the task of translating texts from one natural language to another" (Napier 2000, p. 1 of 10, Internet). The same task is assumed by human translators who convert a source language (SL) text into a target language (TL) text. The question to pose then is whether or not MT and human translation can co-exist in relative harmony. Or, can machine translation serve as a viable alternative to human translators? Those and similar questions can be answered if the MT system is assessed and the degree of its effectiveness is brought to light and unveiled.

This paper sets to evaluate the current status of machine translation. Our findings will be mapped against a set of linguistic, technical, and

practical variables, which determine the effectiveness of machine translation vis-à-vis the larger context of translation as a skill, art, and a science.

2. MT Background

Speech synthesizers were introduced as early as the 1920s, but automatic translation was first attempted by the Russian Petr Smirnov-Troyanskii in the early 1930s. Machine translation proper, however, started in the 1950s with limited hardware and computer software. The aim was then to achieve fully automatic high quality translation (FAHQT) which, at best, is far way from being achieved. Consequently, emphasis was shifted to a partially automatic system featuring human aided machine translation (HAMT), and (MAHT), machine aided human translation

With modern-day advances in technology and the resulting dissemination of information and knowledge, together with globalization and the highly sophisticated world communication network, human translators face problems in coping with the large volume of business-oriented documents, trade, industry, politics and law, awaiting translation. Thus the need for MT has become more pressing than any time before. The "look" and "feel" characteristics of human translation have been replaced with the "cost-saving" and "speed" of machine translation. But the question of "accuracy" and "effectiveness" addressed in this paper; and on which the choice between human translation and MT often depends, is yet to be resolved.

3. Hypothesis

The paper builds on the assumption that Automatic Language Processing Systems (ALPS) at the CTS level (Computer Translation System) are not meant to replace the human translator (Picken, 1986: 122). Language is primarily a human phenomenon, and machines can only accelerate the translation process. Regardless of the role of automation in the translation system (i.e., whether fully or partially automated), the fact remains that "not enough is known about the process of translation to enable a computer to duplicate the efforts of a human being" (Stewart and Vaillette, 2001:445). This is in line with the thesis that there are considerable advances in machine translation technology, but there is no corresponding progress and accuracy to contend with the actual linguistic level.

4. Methodology

The paper takes sample texts from different disciplines and subjects them to unassisted computer translation (CT). The data comprises a variety of text types including: scientific and specialized technical texts, legal, and general texts, in addition to culture-bound expressions, idioms, collocations, instances of lexical and structural ambiguity, as well as slang expressions which are likely to pose problems. Unassisted machine translation sample excerpts are herein presented and then checked for correctness and accuracy. The problems are then identified, classified, and discussed. The overall process of machine translation is then assessed, and suggestions for improvement will be made.

5. The Process of Machine Translation

The key to success in any act of translation is: (1) to analyze and understand the SL text., (2) find TL lexical equivalents, (3) construct grammatical TL texts. This requires a stage of parsing the SL sentences into their constituents according to form, function, and interrelationships. It also requires semantic and syntactic information, in addition to knowledge of morphological rules and the dictionary. The MT system design is either fully or partially automatic. Contrary to partially automatic systems, fully automatic systems rule out any human intervention in the translation process. Partial automation however undergoes three steps of human intervention:

- (1) pre-editing the text (i.e., rewriting the text in a clear and controlled language,
- (2) Designing the system to be interactive (i.e., allowing a person to resolve ambiguities), and
- (3) post-editing, involving revision of the machine output and converting the SL text into an idiomatic version of the TL (ibid: 447).

An MT system design should consider whether the document is of a limited type or a general one. For all practical purposes it is easier to translate a limited type document in a more restricted field. A case in point is the "Canadian METEO system for translating weather reports from English into French, which translates about 30 million words a year with 93% accuracy, while admitting that MT systems still have a long way to go" (ibid: 448). But as we pointed out earlier, due to the volume of work to be done, computer-assisted translation for general and limited-

type documents is on the rise, despite the fact that "language is fundamentally a human phenomenon, so rich, so unpredictable, it can only suffer if forced in a straightjacket by a machine which is very powerful but fundamentally brainless" (Picken, 1986: 120). According to Hutchins (2001):

demand for translation may be divided into three main groups: (1) translation of publishable quality (i.e., for dissemination) (2) short-lived documents for information gathering provided in an unedited form: translation for assimilation, and (3) on-the-spot translation—the role of the interpreter.

But a viable MT system must not restrict itself to a bilingual dictionary and limited knowledge of grammar; it should entail real world knowledge, which is often non-linguistic (Napier, 2000: p.1 of 10, Internet). Translation is more than the substitution of words and grammatical structures. To cater for the needs and goals of international organizations, companies and businesses, the machine translation contribution has taken two forms: the unassisted MT, and the assisted MT.

6. The Reality of Machine Translation

In this section of the paper we will shed light on the actual performance of the MT systems by evaluating their effectiveness in the translation of different text types. Effectiveness is here judged in terms of the accuracy, correctness and acceptability of the machine translation output by professional human translators. Unassisted machine translation sample excerpts will be presented herein and then checked for correctness and accuracy. The English texts have been translated into Arabic through several computer software programs: "Tarjim. Ajeeb"; "Almisbar"; and "Al Wafi".

6.1. Sample Text 1: Economy: CNN & Money Magazine

"What if they 'Pull an Enron?'"

- "I have \$10,000 in my 401 (k) plan at work that is 100-percent invested in my employer's stock. If my company pulls an Enron, I could lose everything. Since I'm fully vested in both my own and my employer's contributions, should I rollover to an IRA."

- "If you are simply willing to take on a much higher level of risk for a shot of higher returns (though the Enron saga shows how truly difficult it can be to gauge risk vs reward)."

"But if I find it hard to envision any reasonable scenario here it makes sense for you to hold 100 percent of your 401 (k) in company stocks.

ماذا اذا شدوا انرون؟

-لدي \$10,000 في ال 401 (ك) الخاصون بي الخطة في العمل الذي هو 100 في المئة استثمرت في ماشية صاحب عملي. اذا شدت شركتي انرون ، يمكن أن أفقد كل شيء. منذ علت تماما في كلاهما ي خاص ومساهمات صاحب عملي، سوف أنا اتدرج الى أي ار ايه .

-اذا كنت راغبا ببساطة أن تعين مستوى خطر عالياً كثيراً لطلقة في عوائد أعلى (ومع ذلك قصة إنرون يظهر كيف صعب حقاً يمكن أن يكون قياس الخطر ضد مكافأة).

لكنني اجده صعب لتصور أي سيناريو عاقل حيث يعني الشيء لك لمسك 100 في المئة من ال 401 (ك) الخاصون بك في وجود الاخرين يخزن.

Results: The software employed in the MT through the computer-based Internet system performed a fully-automated operation free from human intervention. The SL text (i.e., the English original) was fed into the computer without any human intervention of pre or post editing. The Arabic text which resulted from the translation turned out to be distorted at two levels: form and content. The type of translation desired here is a professional one of publishable quality, however, the outcome proved to be contrary to the expectations. The major flaws detected in the translation include the following:

1. The text lacks the cultural and linguistic skills of a human translator.
2. The computer simply manipulates symbols, replaces and rearranges characters, without maintaining textual cohesion, unity, and real-world knowledge to generate meaning.
3. The machine has mainly performed a mechanical job of substituting words in isolation regardless of context, producing inappropriate literal translations like: "شدوا" for "pulled"; "ماشية" for "stock"; "طلقة" for "shot", "في وجود" for "in company", "يخزن" for "stocks", among others , to do away with the unity and meaning of the TL (i.e., Arabic) text.
4. Implementing a linear, left-to-right technique of translation and replacement of lexical items, ending up with awkward strings like:

- ومع ذلك قصة انرون يظهر كيف صعب حقا يمكن ان يكون قياس الخطر ضد مكافأة.

Also, the string in the opening paragraph:

- الخاصون بي الخطة في العمل الذي هو ١٠٠ في المئة استثمرت في ماشية صاحب عملي منذ علت تماما في كلاهما ي خاص ومساهمات صاحب عملي، سوف اتدرج .

Similarly, the opening sentence in the second paragraph which reads:

- أنت جائز لأن تكون قلق بحصول على إنرونييزيد بمسك مثل هذه النسبة المنوية الكبيرة لل ٤٠١ (ك) الخاصون بك في سهم شركتك.

Obviously, there are serious problems with the linguistic output. The sentences are fragmentary, and the structures lack syntactic accuracy as to word order, gender agreement, inadequate lexical choices, decontextualization, and lack of paragraph unity, cohesion, and semantic relevance.

6.2. Sample Text 2: Science and Space // Software: tarjim.ajeeb

“Winged rocket launches galaxy explorer”

A modified L-1011 stargazer jumbo jet lifted off from cape Canaveral Air Force Station shortly after 7 a.m. EDT, carrying a Pegasus rocket. An hour later, the 55-foot rocket was released at 39,000 feet and allowed to free-fall for five seconds before its first stage fired, propelling the satellite into space.

The heart of the galaxy Evolution Explorer, GALEX, is a 19.7-inch diameter telescope that will provide a wide-angle view of the ultraviolet light emitted by distant galaxies. By measuring the ultraviolet light, astronomers hope to learn more about galaxies dominated by hot, short-lived stars that give off a great deal of energy at that wave length”

The Columbia broke up February 1 as it entered the atmosphere 39 miles over Texas, killing all seven astronauts and grounding the shuttle fleet.

صاروخ وينجيد يطلق مستكشف المجرة

فلكي ال-١٠١١ معدل الطائفة أقلعت من محطة قوات جوية كيبب كانافيرال بعد ٧ صباحا توقيت شرقي بقليل، تحمل صاروخ بيغاسوس بعد الساعة، الصاروخ بطول ٥٥ قدم حرر في ٣٩،٠٠٠ قدم وسمح الى الهبوط الحر لمدة خمسة ثواني قبل ان مرحلتها الاولى اطلقت النار، تدفع القمر الصناعي في الفضاء .

قلب مستكشف تطور المجرة ، أو جاليكس، تلسكوب قطر بطول ٩ و ٧ بوصة الذي سيزود رؤية مكبرة للضوء الفوق بنفسجي مبعوثة بالمجرات البعيدة بقياس الضوء الفوق بنفسجي، علماء الفلك يأملون العلم أكثر بالمجرات المسيطرة بنجوم قصيرة الأجل ساخنة التي تصدر الكثير من الطاقة في تلك الموجة .

تحطمت كولومبيا ١ فبراير بينما (كما) دخل الجو ٣٩ ميلا على تكساس، قتل كل سبعة رواد فضاء ووضع على الأرض أسطول المكوك

Results: Again, this scientific, space-oriented text displays cases of discrepancy and unrelatedness similar to those outlined in the previous text (text 1). A few examples may be cited from the Arabic translation:

معدل الطائرة أقلعت من محطة قوات جوية ... بعد ٧ صباحا توقيت شرقي بقليل، حرر في ٣٩٠٠٠ قدم... وسمح الى الهبوط الحر لمدة خمس ثوان قبل أن مرحلتها الأولى أطلقت النار ، تدفع القمر الصناعي في الفضاء .

The same applies to the output of the second paragraph, namely:

قلب مستكشف تطور المجرة، أو جاليكس، تلسكوب قطر بطول ٧،٩ بوصة الذي سيزود رؤية مكبرة للضوء الفوق بنفسجي مبعوثة بالمجرات البعيدة.

The same is true about the following string:

تحطمت كولومبيا ١ فبراير بينما (كما) دخل الجو ٣٩ ميلا على تكساس، قتل كل سبعة رواد فضاء ووضع على الأرض أسطول المكوك.

The point to make here is that the two texts (1 and 2) manifested, to a great extent, the same type of translation errors. This reaffirms that even in highly specialized technical texts (business and space) the unassisted machine translation systems fall short of achieving the goal of rendering accurate TL equivalents as computers have no knowledge of the world to resolve the ambiguities beyond what they are originally programmed to recognize, such as the meanings of words and phrases if at all sustainable, at best. The text lacks the cohesive devices which are necessary for stringing different paragraphs. Such findings provide counter evidence to the common belief that scientific texts are much more responsive to machine translation than legal and literary texts where computers do not work well.

6.3. Sample Text 3: Legal // Software: almisbar

Date: 7. 5. 2003 , http://www.almisbar.com/salam_trans.html //

“NRA, Justice plan appeal of campaign finance ruling to Supreme Court”

- *“Lawyers on both sides of the fight over the constitutionality of the nation’s campaign finance law have informed a federal court they will appeal its ruling striking down some of the new rules and upholding others.”*
- *“Acting on a cornerstone of the law, the court on Friday struck down part of a ban on the raising of so-called “soft money,” the corporate and union contributions of any size and unlimited donations of any source.”*

يخطط أن آر أي وعدل نداء قرار مالية الحملة الى المحكمة العليا

محامون على كلا الجانبين المعركة على دستورية قانون مالية حملة الامة أعلموا محكمة اتحادية التي هم سيستأنفون حكمه الذي ينهي بعض القواعد الجديدة ويقر الاخرين.

تصرف وفق حجر زاوية القانون، أنهت المحكمة جزء يوم الجمعة منع على منشأ ما يسمى مساهمات الاتحاد وشركة أي حجم وتبرعات غير محدودة لأي مصدر.

Results: The lack of harmony, symmetry, and equivalence between the English original text and the Arabic translation renders a mismatch. Sentences like:

محامون على كلا الجانبين المعركة على دستورية قانون مالية حملة الامة... الخ

configure clear discrepancy in the computer translation. Whereas a legal text is expected to be unequivocally clear, the output text is way off the desired outcome. The same applies to the second paragraph which lacks the minimum criterion of lexical equivalence, grammatical correspondence and agreement, as well as unity, coherence, and flow.

6.4 Sample Text 4: General //Software: “Al Wafi”

- *“A lot of black hats are very young,” Mark said. Lots of people change their behavior as they mature. A lot of times as these guys grow older, they come to realize that what they’ve done was not in the best interest of everybody else. I’ve seen many black hats eventually get their jobs as system*

administrators, and sometimes then they realize that what they've been doing is incorrect."

Some experts caution that the white hats may need to re-evaluate their practice of disseminating information about security holes.

- "The assumption is I have to have the exploit to see if the fix works. But then I have to put the fix in place to see if the exploit works. It's a vicious circle, and that's a problem," Spafford said.

الكثير من القبعات السوداء صغيرة جدا، علامة قالت. الكثير من الناس يغيرون سلوكهم كما ينضجون. الكثير من الاوقات كهؤلاء الأشخاص ينمون أكبر سنا، يجيئون أن يدركوا بأن ما هم قد عملوا ما كانوا في الاهتمام الأفضل لكل شخص ما عدا ذلك. أنا قد رأيت العديد من القبعات السوداء تصبح أشغال في النهاية كمدراء نظام، وأحيانا إذن يدركون بأن ما هم كانوا وما زالوا يعملون خاطئون."

بعض الخبراء يحذرون الذي القبعات البيضاء لربما تحتاج أن تعيد تقييم ممارستهم بذر المعلومات حول فتحات الأمن.

"الفرضية أنا يجب أن آخذ المأثرة أن ترى اذا المأزق يعمل ز لكن اذن أنا يجب أن أضع المأزق في المكان الصحيح أن يرى اذا المأثرة يعمل. انه حلقة مفرغة، وتلك مشكلة،" سبافوردي قال.

Results: The unassisted computer translation of this general text confused the proper noun (i.e., the personal name) "Mark" with the common noun "mark" (علامة), to throw into disarray the entire text. In the second paragraph, the Arabic translation equates the word "that" with its literal Arabic counterpart "الذي", instead of the correct equivalent of "بأن", according to context. Likewise, the string which reads:

يجيئون أن يدركوا بأن ما هم قد عملوا ما كانوا في الاهتمام الأفضل لكل شخص ما عدا ذلك. أنا قد رأيت العديد من القبعات

السوداء تصبح أشغال في النهاية كمدراء نظام، وأحيانا إذن يدركون بأن ما هم كانوا وما زالوا يعملون خاطئون."

poses another serious problem in terms of meaning and relatedness. In addition, the Arabic reporting verb and agent "سبافوردي قال", should come at the beginning of the quoted matter to introduce it, and not at the end. In addition, the Arabic translation copies the English word order (SVO) and not the Arabic (VSO) order, as is the case in:

"بعض الخبراء يحذرون" instead of: "ويحذر بعض الخبراء", among others.

6.5. Text Type 5: idioms and Expressions // Software: tarjim ajeeb

1. <i>A monkey on his back</i>	قرد طريق الفراش
2. <i>Sitting on a fence</i>	جالس على سور
3. <i>On a shoe string</i>	على حبل حذاء
4. <i>Take someone for a ride</i>	يخدع شخص ما
5. <i>Pass the buck</i>	يمر الظبي
6. <i>Pull a fast one</i>	السحب واحد ثابت
7. <i>Like water off a duck's back</i>	غير مؤثر
8. <i>Jump down one's throat</i>	القفزة أسفل واحد هي حلق
9. <i>Like a bat out of hell</i>	مثل مضرب من الجحيم
10. <i>He kicked the bucket</i>	مات

Results: The bulk of the translations shows a tendency to adopt the word-for-word translation strategy. The computer fails to recognize the special nature of an idiom in which the total meaning is not based on the meanings of the individual words of which it is composed. This is not to rule out the possibility of coming across some sporadic cases of correct translations as in 4, 7, and 10, above.

6.6 Text Type 6: Slang // Software: tarjim ajeeb

1. <i>Full of baloney</i>	مملوء ببولونيا
2. <i>Go ballistics</i>	يذهب علم القذائف
3. <i>Beat it</i>	دقه هو
4. <i>A knee-jerk reaction</i>	رد فعل عقوي
5. <i>Can it</i>	يستطيع هو
6. <i>He's gone round the bend</i>	قد قام بالجولة المنحني
7. <i>He's a few sandwiches short of a picnic</i>	هو ساندويشات قليلة بلا نزهة

6.7 Text Type 7: Culture-bound Expressions//Software:Almisbar.com

- *There is going to be a garage sale next week*
هناك سيصبح بيع مرآب الأسبوع القادم
- *Our wide receivers were rusty*
مستلمونا العريضون كانوا صدنون
- *Our team suffered from the successive power plays against us*
فريقنا عانى من المسرحيات الكهربائية المتعاقبة ضدنا
- *They scored three touchdowns and two field goals*
أحرزوا ثلاث هبوط وهدفين حقل

Results: The SL sentences addressed some aspects of the American culture, namely specific sports and the "garage sale" experience. Again, the computer translation showed a mismatch, due to lack of cultural equivalents in the Arabic model. The translation strategy used here is one of "literal" and "word-for-word" substitutions, irrespective of context. For example, the elements: "garage sale, wide receivers, power plays, and touchdowns", have been translated as: بيع مرآب ، مستلمونا العريضون ، المسرحيات الكهربائية and هبوط , respectively.

7. Discussion of Results

In this mode of unassisted computer translation three computer software programs, namely: "tarjum ajeeb", "alwafi", and "almisbar", have been applied. It is unfortunate however to note that none of these programs succeeded in converting the SL text into an idiomatic version of the TL text. If anything, the results prove beyond any doubt that fully automatic translation systems (FAHQT) have failed to achieve their goals. Rather, the networked machine translation with no human involvement amounts to "an on-line immediate 'rough' translation with no post-editing treatment. Examples of this form of MT include IBM alphaworks, native search, Babel Fish 2020, Worldlingo and Dragon Systems" (Hutchins, 2001, page 7 of 9, Internet).

According to Napier (2000: page 1 of 10/Internet) the result of this type of translation is an "unpublished text and gives only a gist of the source, hence the term 'gisting'." The emerging difficulties and problems are here instigated by a variety of sources, such as: lexical ambiguity, structural ambiguity, idioms, collocations, and the like. The result is lack

of understanding of the language, world, text, and context, and consequently failure to create meaning, leading to awkward translations as shown in the seven types of translation cited above.

The incidence of the words "pull" and "stock" in the text 1," entitled: "What if they 'pull an 'Enron?'" which were erroneously translated into Arabic as: *يشد* and *ماشية* respectively, instead of *يمر بنفس* *التجربة* and *أسهم*, is indicative of awkward and unidiomatic computer translation output. The same applies to the rest of the texts (2 through 7). For the sake of brevity, only one example will be cited from each text type.

Text	Word/Phrase	MT output	ideal translation
2	<i>grounding</i>	وضع على الأرض	ايقاف الرحلات
3	<i>justice</i>	عدل	قاضي
4	<i>Mark</i>	علامة	اسم شخص
5	<i>pass the buck</i>	يمر الظبي	لا يتحمل مسؤولية
6	<i>beat it</i>	دقه هو	اترك المكان
7	<i>touch down</i>	هبوط	احراز هدف (في لعبة كرة القدم الأمريكية)

The above examples pose problems of lexical equivalence at the word and the phrase level. The problems reside in the fact that many of the words have more than one meaning (i.e., homophony), leading to lexical ambiguity. In such cases, only context can determine the right translational equivalent in the TL, something which machine translation often ignores as it treats each lexical item as a separate and independent entity irrespective of context.

The problem is aggravated when it combines with structural ambiguity. Here, the total meaning is distorted due to the lack of formal correspondence, cohesion, unity and flow. The computer translation of the texts cited above poses serious problems due to the lack of identity between the SL and the TL structures. A case in point is the Arabic translation of the following paragraph from Text 1: "What if they 'pull an Enron?" The English text reads:

"The question, then, is what to do about it. Your solution of rolling your 401 (k) money into a rollover IRA would be a good one, if you were able to do it.

Unfortunately, regardless of whether you're fully vested or not, such rollovers are only allowed when you leave a company to retire or switch to another job."

The Arabic computer translation has been rendered as:

السؤال، ثم، ماذا يعمل عنه حلك لدرجة ال ١، ٤ (ك) الخاصون بك المال في أي آراه سيكون جيد، إذا كنت قادرا أن تعمله للأسف، بصرف النظر عن سواء ارتديت تماما أو ليس، مثل هذه الحوادث سمحت فقط عندما تترك شركة للتقاعد أو التحول إلى عمل آخر.

From the outset, a reading of the Arabic text leads you astray, as it lacks the basic requirements of textuality, coherence, and cohesion, let alone meaning. For instance, the English string: "what to do about it" was translated as: "ماذا يعمل عنه"، instead of "ما هو الحل"، is totally unacceptable as is and needs further editing and intervention (i.e., post-editing) to fix it. Similarly, the string which reads ... of rolling your 401 (k) money...etc., has been translated into Arabic as:

"لدرجة ال ٤٠١ (ك) الخاصون بك المال"

which again shows lack of gender agreement between (ك) and الخاصون بك (ك) ال ٤٠١. Another problem resides in the rendering of "literal" translation for the string: "whether you're fully vested or not" as:

"سواء ارتديت تماما أو ليس"

which yields unacceptable TL choices.

Another major problem in the machine translation output is failure to insert proper cohesive devices such as conjunctions and adverbial connectors which provide textual cohesion. Such devices are characteristic of Arabic writing as each paragraph is connected with the previous one with a conjunction like "and", which is the equivalent of Arabic (و).

The lack of real world knowledge and the relationships among things and how they fit together to generate meaning pose another problem to the MT product. Personal names like Arabic "أمونس" and English "April" were not recognized as personal names and thus were translated as "entertainer" and "نيسان", respectively. Meanwhile, the MT works very well when there is no need for world knowledge and there is a controlled language as is the case in METEO, mentioned above.

Another drawback in the MT product is misspelled words, which adversely affects the translation of the entire sentences and consequently affects total meaning. For example, the phrase "Supreme Court" was transliterated as "سوبريم كورت" because it was erroneously entered in the SL text as one word: "SupremeCourt" instead of two. In such cases users

are encouraged to use the spelling checkers before resorting to machine translation.

In view of the above, it is obvious that a fully automated MT system is still unachievable as good machine translation must consist of more than a bilingual dictionary and knowledge for mechanical substitution regardless of meaning. In this networked MT system, Petrits et al. (2001: p. 7 of 9/ Internet) consider computers as "merely manipulators of symbols (replacing and rearranging strings of characters)." In this case the need arises for a more practical system which utilizes the MT services to the optimum degree possible while aiming at a meaningful and clear TL output. This can be achieved if we do not dismiss the human factor and refrain from considering the machine as an alternative to human translation. In other words, we need to make the best of our human and technical resources by opting for the assisted MT, which uses a human translator to "clear up after and sometimes before translation in order to get better quality results". Assisted MT can be divided into Human Aided Machine Translation (HAMT), and Machine Aided Human Translation (MAHT) or Computer Aided Translation (CAT)" (Napier 2000: p.1 of 10/Internet).

In the two modes of Computer Assisted translation, Napier (2000: p. 3 of 10/Internet) explicates that human translators can take great advantages from the technological advances which provide for MT "to evolve as a productivity tool which enables translators to use the extensive memories now available" such as: furnishing a "side-by-side printout of any translated document, coding as a default entry the most common meaning of a group of words and phrases, furnishing lists of Key Words in Context (KWIC)."

The translation memory software has taken the form of workstations which enable professional translators to gain access to sophisticated translation tools such as the dictionaries which aid and support human translators. It enables them to create, store, align and search data-base of previously translated texts (e.g., general translation memory data-base, specialist dictionary for idioms, user dictionary for words added or updated, among other things).

The considerable speed, of approximately 1000 words per minute, and the cost saving offered by the machine translation, together with the "look and feel" of human translators make the best of a combined schemata of HAMT, MAHT /CAT. The rough translations produced by computers are revised (e.g., post-editing, and pre-editing by using controlled language). This is realized by "reducing or eliminating lexical ambiguity and simplifying complex sentence structure" (Hutchins, 2002:

p. 1 of 3, Internet). It follows then that translation workstations can be of great help to professional translators whose demand for translation focuses on the publishable quality. This proposition coincides with Hutchins' (1997: p. 1 of 8/Internet) argument that "MT and human translation can and will coexist in relative harmony." It is imperative then that good quality translation which requires one interchange (i.e., when the content is sensitive) can only be satisfied by human translators. But this is not to cancel the role played by the machine in maintaining higher productivity and consistency especially when the quality of the output is not of publishable quality and of little importance (i.e., translation for dissemination and low circulation technical reports which serve as rough versions to aid comprehension).

While acknowledging the role of machine translation to some degree, it should be pointed out, according to Napier (2000: p.4 of 10/Internet) that the quality and the benefits derived from the MT systems depend on: "(1) the type of source text (i.e., general or specialized, (2) quality of source text (i.e., written in good or poor quality), (3) the time spent on the development of the system, and (4) affinity of the languages combined (i.e., being of the same family)." For instance, typographic errors and grammatical errors affect negatively the quality of the machine translation output.

In her article "Professor to improve Arabic translation by computer" Cavalli-Sforza (2003: p. 2 of 3/Internet) reports that

computers are still quite far from performing as well as human translators ..., but if a human translator can go over the output of a machine translation system and make just a few corrections, his or her productivity can be enhanced by having that tool available.

8. Conclusion

Based on the data retrieved from seven types of texts, and in view of the analysis and discussion of results, this paper has demonstrated that the current status of machine translation is still questionable. It has been shown that a fully automated MT system is still unachieved, and "after fifty years of research the true art of good quality machine translation remains a mystery." (Napier, 2000: p. 7 of 9/Internet).

Our findings lend support to the belief that machine translation does not pose a threat to human translators. On the contrary, we have noticed that by virtue of technological advancement, computers can be a

valuable productivity tool to professional translators as they provide higher productivity and increase consistency. At the same time, CAT can provide the features of auto text, search, replace and spell check. But if we are to opt for one type of MT, I support the assisted type against the unassisted (FAHQT). Also for the choice between the two types of computer assisted translation, I subscribe to the Human Assisted Machine Translation (HAMT) thesis against the Machine Assisted Human Translation (MAHT). After all, machine translation is here to stay regardless of its limited contribution and effectiveness as a pure and independent fully automatic system free from human intervention and assistance.

References

- Cavalli-Sforza.** (2003). "Violetta. Professor to Improve Arabic Translation by Computer." (Internet Source, 2003).
- Hutchins, John.** (2002). Machine Translation Today and Tomorrow." From Gerd Willee, Bernhard Schroder, Hans-Christian Schmitz (eds.) *Computerlinguistik: wasgeht was kommt? Computational Linguistics: Achievements and Perspectives*. Festschrift für Winfried Leiders (Sankt Augustin: Grarde! Verlag, 159-162.
- (2001). "Machine Translation and Human Translation: in Competition or in complementation? *International Journal of Translation*, 13, 5-20.
- (1997). "Evaluation of Machine Translation and Translation Tools." In *Survey of the State of the Art in Human Language Technology*. Eds. G. B. Varile and A. Zampolli (Pisa: Giardini,), 418-419.
- Napier, Marieke.** (2000). "The Soldiers are in the Coffee – an introduction to Machine Translation." *Cultivate Interactive*, issue 2, October.
- Petrits, A., et al.** (2001). "Development of Multilingual Computer Tools." MT Summit VIII.
- Picken, Catriona** (ed.). (1986). *Translating and the computer: Seventh International Conference on Translation*. Oxford: the Alden Press.
- Stewart, Thomas W., and Nathan Vaillette** (eds.). (2001). *Language Files: Materials for an Introduction to Language and Linguistics*. (8th edition). The Ohio State University.