

THE SCOPE AND LIMITS OF MACHINE TRANSLATION

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1 - Translation Process and Theory

Even though no one is capable of providing an exact list of rules that would allow to arrive at a perfect translation, there are some procedures and methods, knowledge of which may facilitate translators' work. In order to have an idea about translation itself and be able to produce texts in various languages, one should get familiar with the process and theory of translation. The awareness of both notions may provide necessary advice and clues. What is more, it may be beneficiary for the translators' competence: increasing the quality of their work; enabling them to deliver the translation according to the rules, style, and grammar of the TL; allowing for quick, accurate, clear and naturally sounding translation. Every translator adapts their own approach towards the process of translation, nevertheless it always involves working in subsequent steps. The following passage describes two different models of translation process: the two-phase model and the three-phase model that may help to arrange the act of a text production. Adapting of the first model includes working in two sequential phases, namely analysis (decoding) and synthesis (recoding), whereas the second model adaptation additionally incorporates transfer (transcoding) phase. According to Nord (2005), the first step – analysis, includes dissolution of grammatical, semantic and stylistic elements which is to help a translator handle the meaning (both explicit and implicit). In the second step, a translator is supposed to choose his or her strategy, decide whether the text function is to be changed or preserved. Whereas in the last step, the final product - a target text, conforming to the needs of the TT receivers is produced.

In order to be more competent, besides being acknowledged with the phases of the translation process, a professional translator should also be aware of the theory of translation including translation strategies, procedures and methods. Translation strategy may be defined as a plan undertaken by a translator to achieve a certain translation goal. The term strategy incorporates techniques, methods as well as procedures. Newmark (1988) mentions the difference between translation methods and translation procedures. He writes that, “while

translation methods relate to whole texts, translation procedures are used for sentences and the smaller units of language.” It should also be stressed that a strategy, besides concerning the whole text, is undertaken on the basis on the initiator’s needs, text type and a purpose that it is to serve. Procedure, on the other hand, is a more narrow notion, applied to solve a specific problem by turning to a dictionary or asking other translators for help. Newmark enumerates the following translation methods:

Word-for-word translation: in which the SL word order is preserved and the words translated singly by their most common meanings, out of context.

Literal translation: in which the SL grammatical constructions are converted to their nearest TL equivalents, but the lexical words are again translated singly, out of context.

Faithful translation: it attempts to produce the precise contextual meaning of the original within the constraints of the TL grammatical structures.

Semantic translation: which differs from 'faithful translation' only in as far as it must take more account of the aesthetic value of the SL text.

Adaptation: which is the freest form of translation, and is used mainly for plays (comedies) and poetry; the themes, characters, plots are usually preserved, the SL culture is converted to the TL culture and the text is rewritten.

Free translation: it produces the TL text without the style, form, or content of the original.

Idiomatic translation: it reproduces the 'message' of the original but tends to distort nuances of meaning by preferring colloquialisms and idioms where these do not exist in the original.

Communicative translation: it attempts to render the exact contextual meaning of the original in such a way that both content and language are readily acceptable and comprehensible to the readership (adapted from Newmark, 1988: 45-47).

All of the above mentioned methods are of the same importance, there is no one superior to others. The choice of an appropriate method rests on the translator, it depends on the text that is to be translated and its purpose as defined by the initiator. The following, on the other hand, are the different translation procedures proposed by Newmark (1988):

Transference: it is the process of transferring an SL word to a TL text.

Naturalization: it adapts the SL word first to the normal pronunciation, then to the normal morphology of the TL.

Cultural equivalent: it means replacing a cultural word in the SL with a TL.

Functional equivalent: it requires the use of a culture-neutral word.

Descriptive equivalent: in this procedure the meaning of the TW is explained in several words.

Synonymy: it is a "near TL equivalent."

Through-translation: it is the literal translation of common collocations, names of organizations and components of compounds. It can also be called: calque or loan translation.

Modulation: it occurs when the translator reproduces the message of the original text in the TL text in conformity with the current norms of the TL, since the SL and the TL may appear dissimilar in terms of perspective.

Recognized translation: it occurs when the translator "normally uses the official or the generally accepted translation of any institutional term."

Compensation: it occurs when loss of meaning in one part of a sentence is compensated in another part.

Paraphrase: in this procedure the meaning of the TW is explained. Here the explanation is much more detailed than that of descriptive equivalent.

Couplets: it occurs when the translator combines two different procedures.

Notes: notes are additional information in a translation. (adapted from Newmark, 1988: 80-91)

The knowledge of translation procedures and strategies may give an idea of solving potential translation problems as well as improving the translation quality. It may focus translator's attention on relevant factors that should be taken into consideration before the process of translation. Moreover, those being familiar with translation process and theory, are more likely to choose an appropriate method or approach depending on the kind of text to be translated. Machines on the other hand, are only able to produce word to word translation. The lack of 'real world knowledge' which consequently influences the inability to apply necessary strategies may result in ineffective, raw translation.

Next to the strategies and procedures, another crucial notion in translation theory is equivalence that will be discussed in the following subchapter.

2 - *The notion of equivalence*

The notion of equivalence is crucial in translation studies, yet approaches to it may differ considerably. As argued by Dorothy Kenny, "some theorists define translation in terms of equivalence relations (Catford; Nida and Taber; Toury; Pym; Koller) while others reject the theoretical notion of equivalence, claiming it is either irrelevant (Snell-Hornby) or damaging (Gentzler) to translation studies" (Kenny, 2009: 96). Therefore, it can be either perceived as being necessary in translation, being an obstacle, or being a helpful category in the process of

describing translation. Equivalence can be defined as a relationship between the source text and the target text. It should be assumed thus, that the words from the ST and the TT supposedly describe the same concept, “i.e on the basis of their referential or denotative equivalence;” the ST and TT words when introduced to the native speakers of the two languages make close associations, “i.e their connotative equivalence;” the ST and TT words

can be used in similar context in the languages that are used, “i.e what Koller calls text- normative equivalence;” the ST and TT words make similar impression on their readers, “i.e pragmatic or dynamic equivalence” (Kenny, 2009: 97).

Eugene Nida makes another distinction in the notion of equivalence. He identifies formal equivalence, being “closest possible match of form and content between ST and TT” or “a means of providing some degree of insight into the lexical, grammatical or structural form of a source text;” and dynamic equivalence, being a “principle of equivalence of effect on reader of TT” (in Hatim & Mason, 1990: 7). The former may be appropriate in diplomatic negotiations, in which case the translator should translate everything literally instead of bearing the responsibility for reinterpretation. The latter on the other hand, may be used in the translation of poetry or literature, where the author may employ his or her own style and the result should not read like a translation (in this case, the content should be preserved, yet different writing techniques may be employed). Even though most translations rest between these two techniques, dynamic translation is perceived as more effective procedure. As concluded by Nida, “the present direction is toward increasing emphasis on dynamic equivalences” (in Hatim & Mason, 1990: 7).

According to Sergio Bolaños Cuellar, the notion of equivalence is a key concept in Modern Translation Theory. In his research paper, he proposes the distinction between Non-Linguistics/Context-oriented Theories (COT) and Linguistics/Text-oriented Theories (TOT), investigating equivalence on their basis. COT mention points and approaches crucial for the translation such as: “the subjective interpretation of the original by the translator (hermeneutic approach), the maintenance of an allegedly similar response on the target audience (response-oriented approach), the peculiarity of receptors’ polysystemic culture (descriptive translation studies), the question of power and manipulation in translation (post-modernist/ deconstructivist approaches), and the purpose of translation according target culture norms (functionalistic / skopos theory)” (Cuellar: 6). What is more, in order to translate a given text there are also other components that should be taken into consideration. Namely, while mentioning language use: Sender, Text, Receiver must be analyzed; while labeling Conditions and Determinants from a communicative point of view, “Competences (grammatical, communicative, textual, and cognitive), Socio-Psychological Characterization of Participants (social variables such as gender,

age, role; psychological variables such as motivation, attention, interest, memory), and Context (time and place of communication; historical, economic and social circumstances)” (Cuellar: 5) analysis must not be neglected. Nevertheless, according to Modern Translation Theories, not only the equivalence is important in producing an adequate text in the TL. There are situations in which it is impossible or not even desired, in which case the functional approach takes precedence over the normal standards of equivalence. The main point of this approach presented by Reiss and Vermeer indicates that it is not the ST as such, or its effects on the SR, or the function that it serves that determines the translation process. The determinant is the function or skopos of the TT as established by the initiator’s needs. Because translation is viewed as a specific form of human action, the act performed by a machine should actually be called transcodification. Nevertheless, the in depth analysis on this topic will be presented in the chapter called “Skopos Theory and Nord’s model of translation-oriented text.”

3 - Brief History of Machine Translation

Automatic translation between human languages has been a long-term scientific dream. It was one of the earliest applications suggested for computers, but turning this dream into reality has proved to be a much harder task than at first appeared. Hrehovcik (2006) argues that even though the research on machine translation started in the early 1930s, serious efforts to develop a MT system were not made until the years following World War II. It was at the beginning of 1950s that the researchers from Russia, United States and Western Europe assured that high quality automatic translation of documents from different fields is on a verge of being possible. The studies were conducted at the University of Washington, at the University of California as well as at the Massachusetts Institute of Technology. In 1951 Yehoshua Bar-Hillel was appointed the first full-time researcher in machine translation at MIT. After a year he conducted the first conference on MT, presenting plans for the future. The specialists realized that if they wanted automatic translation to be successful they had to introduce controlled language in the texts and also remember about the needs for human assistance (pre- and post-editing) (Hutchins & Somers, 1992: 6).

The first known public demonstration of a MT system, which enabled its development, took place in New York in 1954 at Georgetown University. As Hutchins and Somers comment on that event, “a carefully selected sample of 49 Russian sentences was translated into English, using a very restricted vocabulary of 250 words and just six grammar rules” (Hutchins & Somers, 1992: 6). Even though the demonstration did not have great scientific value, it did have an

influence on the extension of funding of MT in the United States and the stimulation of MT projects elsewhere in the world.

The research activities stopped after 1966 when a report of the Automatic Language Processing Advisory Committee (ALPAC), formed by the government sponsors of MT in the United States, was published. The Committee examined the usefulness of MT and came to the conclusion that the funds devoted to that particular branch of science should be significantly reduced as human translation completely meets the demand for translation being much faster, more accurate, and less expensive at the same time. As argued by Hrehovcik, “the report recommended that most research into MT be stopped immediately due to its failure to produce useful translation” (Hrehovcik, 2006: 63). The report did not see any point in further investment in MT yet, it supported the development of machine tools for translators. According to Hutchins and Somers (1992), the report was widely condemned for being biased and incredibly shortsighted, it was wrong to criticize MT and should not have impeded the financial support of current approaches. It was not until 1980s that interest was renewed in MT. Work began on innovative projects financed by Philips or Siemens. It was also expanded in other countries than the United States and the Soviet Union. Hrehovcik claims that, “in Japan, almost all major electronic companies invested into the development of new commercial MT systems” (Hrehovcik, 2006: 63). New efforts in the area seemed to be successful because of recent software technologies, greater memory size and the speed of computers. The achievements in the field of MT were enriched in latest techniques: example-based systems, so-called corpora; and statistics-based MT.

As claimed by Hutchins and Somers (1992) there were various needs for translation in different countries. Scientists in America concentrated on the translation of Russian technical materials into English, whereas those in Canada invested into the possibility of English-French translation that could not have been currently found on the market. The building of English-French systems for translation aircraft manuals was unsuccessful, yet the group responsible for that project was renewed in 1976 to undertake another task. They were supposed to create system called Meteo, which was designed in order to facilitate translation of weather forecast from English into French. In the same year, the Commission of the European Communities determined the installation of an English-French system called Systran. It had been developed in 1970 by Peter Toma, and was used for Russian-English translation for the US Air Force. In subsequent years, the Commission decided to fund also other project, translating pairs such as French-English, English-Italian, English-German and others. In the late 1970s, a system called Eurotra was developed. This multilingual project was to ensure translations from all the

Community languages. The same year brought the creation of transfer-based Ariane system by the French group, and multilingual transfer system SUSY by the Saarbrücken group. These systems were crucial because as highlighted by Hutchins and Somers, “it was now the general consensus in the MT research community that the best prospects for significant advances lay in the development of transfer-based systems” (Hutchins & Somers, 1992:8). The studies at the Linguistic Research Center (LRC) at Austin, Texas followed the same premise, creating new transfer-based system, called METAL.

When MT was first proposed in 1940s nobody dreamt of all the systems that were to be developed in the subsequent years. The emergence of all innovative projects and possibilities influenced the growing need for translation aids that is constantly evolving.

4 - Operation systems (1st, 2nd and 3rd generation)

Machine Translation systems may be intended for two languages – being called bilingual, or for more than two languages - being referred to as multilingual. The former are designed to work either in one or two directions, with dominance of unidirectional, whereas the latter are usually bidirectional. There are three main system designs to be distinguished. The first, called ‘direct translation’ approach (historically the oldest, often referred to as systems of the first generation) was used in the early MT systems and was destined specifically for one particular pair on languages (e.g Russian and SL and English as TL). As the name suggests the translation is direct from source language into the target language. In the direct translation approach the vocabulary and syntax of SL text need not be analyzed more than necessary for the resolution of ambiguities, the correct identification of TL expressions and the specification of TL word order. The success of the systems of this approach depends on the quality of their large bilingual dictionaries and the single monolithic program for the analysis of the generation of the text. It may be considered to be word-for-word system since the translated text is usually nothing more than substitution of words; nevertheless it should be pointed out that in comparison with others it is extremely fast and efficient system. The lack of contextual accuracy and inability to capture the meaning of SL however, prompted the development of other systems. These are often regarded as indirect strategies and second generation systems that consist of ‘interlingua’ and ‘transfer approach’. Interlingua was created as a result of the growing needs for multi-lingual MT systems. It is able to deal with more than only one pair of particular languages at the same time. The translation takes place in two stages: from the source language into interlingua and then from interlingua into target language. This approach is believed to be the most economic when there are more than three languages to be used. Adopting the interlingua approach allows the

translation of the language of any nation into the language of any other nation. It is easy noticeable that this approach was inspired by the idea of a universal language such as Esperanto, which has interested certain linguists for centuries. What is more, there is less analysis and synthesis involved using an interlingua system in comparisons with earlier mentioned direct system. For instance, in case of 4 languages (12 language pairs), there are as many as 12 phases involved in the direct system while the interlingua has only 8. The last, third design is referred to as transfer approach (they also takes advantage of indirect approach and are referred to as systems of the second generation). Unlike interlingua approach, this one is conducted in three stages. First, the representation of the source language is produced, then the representation of the target language and only then the text in target language appears. In this case, only the resolution of the ambiguities of the language that is dealt with is required. The newest systems (of the third generation, based on text corpora, henceforth corpus-based systems) are usually of hybrid forms. They are a mixture of earlier rule-based systems and more recent, advanced systems. They tend to utilize the best properties of the predecessors in order to come up with the best results possible. Therefore, transfer systems may incorporate interlingua features, e.g. for certain areas of vocabulary or syntax interlingua systems may well use transfer components, and rule-based systems may be based on probabilistic data and stochastic methods. To sum up, first generation of MT systems is associated with direct approach; interlingua and transfer approaches are typical of the second generation, whereas the third generation that emerged in 1990s involves the use of corpus-based methods.

5 - The Practical Use of MT Systems

Human and machine involvement in the process of translation can be placed at two marginal ends of a spectrum of translation methods. At one extreme there is a Fully Automatic High Quality Translation (FAHQQT), and on the other there is a traditional human translation; Human-Aided Machine Translation (HAMT) and Machine-Aided Human Translation are between them. According to Somers, this division is made in order to imply “a distinction between a basically human activity involving computer-based tools (...), and a computer-driven activity requiring the assistance of a human operator” (Somers, 2003: 13). The acronyms may be confusing, therefore CAT (or „Computer-Assisted Translation“) is often used to cover all types. The division is shown in Figure 1.

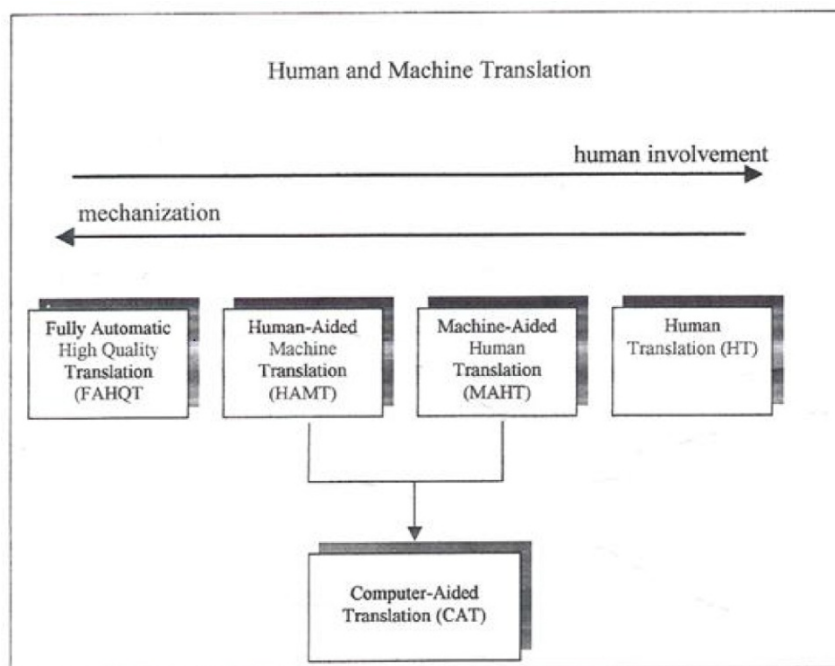


Figure 1: Human and Machine Translation (Adopted from Hutchins & Somers, 1992: 148).

The term FAHQT was “coined by Yehoshua Bar-Hillel to mean an entire translation process that can be undertaken by machine with high quality results” (Sin-wai Chan, 2004: 83). According to Hutchins and Somers, Bar-Hillel “argued from 1951 that fully automatic translation of a quality comparable to that of human translators was not merely an unrealistic aim for research but also impossible in principle” (Hutchins & Somers, 1992: 148). He also claimed that a computer could not be compared to a human translator as it does not have so called “real world knowledge,” which is responsible for resolving semantic and syntactic ambiguities. As this knowledge could not be incorporated into FAHQT, it was attainable only in the theory. The best known Bar-Hillel’s example is the following:

Little John was looking for his toy box. Finally he found it. The box was in the pen. John was very happy.

Focusing on the third sentence, a machine would translate “pen” as an “writing tool” yet, a human translator making the correct disambiguation, would notice that it is impossible for a box to be found in a writing tool. Thus, a translator would probably interpret “pen” as a “playpen,” creating a logical translation. The possession of ‘real world knowledge’ gives a translator yet another advantage over the machine. Namely, it allows to come up with a translation that entails crucial associations in a situation reacquiring that kind of solution. The words, chosen by a human translator may be selected in such a manner as to conjoin different images in the receivers’ minds. Machines, in the contrary, select the words by chance, leaving no

place for so called ‘scenes-and-frames’ semantics. According to Shell-Hornby (2005), the concept of scenes-and-frames was introduced by Charles Fillmore in 1970s. The frame is a “system of linguistic choice” or “grammatical structures,” whereas scene is “a coherent segment of beliefs or experiences or imaginings.” Frames activate scenes in the people’s mind and vice versa (frame-scene, scene-frame, scene-scene, frame-frame), which means that for instance a phrase found in a text triggers associations with other linguistic forms, activating further associations. In the scenes-and-frames approach, the translation may be described as an act of communication between the author of the ST, the translator (as both reader and producer of the text), and the reader of the TT. The translation starts from a presented frame (that was built by the author from prototypical scenes), and basing on those SL frames a translator creates his or her own scenes. The results, depending on the translator’s experience and knowledge of both source and target culture, may derive from author’s intentions or scenes naturally activated by a native speaker of the SL. To sum up, machine transcoding is based on mechanical frame-frame substitution, which means random, automatic replacement of source words with their target equivalents. Human translation, on the other hand, includes frame-scene-frame interaction, being a constant decision-making process as the choice of the scenes that have been activated entails finding of suitable frames in the TL.

Mentioning a translation as a decision making process, it should be also stressed that a translator is a text producer. In contrast with a computer, he or she is capable of making a decision and incorporating his or her own style into the translation product. A great variety of texts involve “problem solving” in the course of translation. Lets consider the choices that are required in the translation of a touristic brochures for instance. Even if the translation of the brochure is intended for people of the same age, sex, educational and social background; the areas in which they live are culturally and linguistically different. Therefore, having been brought up in other surroundings, people posses different knowledge of the world as well as individual perception of things. Those factors influence the way TRs examine the translated text. They may, for example, not be familiar with the subject matter of the ST, that on the contrary is obvious for the SR. In some cases, if the compatibility between ST and TT is to be achieved, the translators have to use their background knowledge and transfer competence (which includes the capacity of searching and using appropriate information sources together with useful tools), acting as a cultural mediators. The translation of brochures may involve the explanation of terms and notes with additional information for people from other countries. Moreover, it may entails the disambiguation of allusions, especially historical ones; or insertion of maps with directions. Thanks to those elements, a text is provided with supplementary information (e.g. an explanation

of a term, related to the specific domain/ culture; additional descriptions of places, hotels, bars, restaurants; or clarification of traditions and customs) and sometimes with dissolution of mistakes in the original text. The whole process of cross-cultural translation includes adjustments or so called adaptations, so that the facts from the ST were more transparent for the TRs. Consequently, the translators are text producers. Their translation, unlike the one done by the machines, includes decision making and adding of extra information, not automatic substitution of words. Getting back to the scope of the translation methods, another crucial abbreviation is MAHT. This “refers to a type of human translation with limited assistance from the machine” (Sin-wai Chan, 2004: 139). In this process computer aids enable a human translator to check spelling, grammar, equivalents or even recall past translations. There is a number of tools used by the translators, which according to Somers (2003) may be subordinated under the term “the translator’s workstation.” Some of them include word processing software, dictation tools, or lexical resources. A word-count, a spell-checker, a thesaurus as well as grammar and style checkers are associated with word processing software. Most of them are widely available yet, as remarked by Somers (2003) they are “highly language-dependent” and “language-specific.” This point is also highlighted by Hutchins and Somers who maintain that, “the availability of spelling checkers depends on the target language” (Hutchins & Somers, 1992: 149), arguing that whereas it is easy to find one for English, it may not be so obvious while dealing with other languages. Grammar checkers look for errors such as the non-agreement of subjects and verbs, word repetition, sentences where there are no finite verbs and so on. Style checkers look for features considered to be stylistically awkward, such as clichés, sentences beginning with conjunctions or ending with prepositions, sentences with incorrect length.

Dictation tools may also be significant in a translator’s work. Thanks to these aids, instead of typing in a translation, it is possible to insert it into the computer using speech recognition systems. This contributes to time saving and is of great help for the translators who “are less likely to come out with a clumsy or inelegant construction if they actually have to say it out loud” (Somers, 2003: 16). A translator’s workstation should also have an access to lexical resources such as online dictionaries. They may seem to be only a computer versions of traditional ones yet, as claimed by Somers they are superior because “they may take advantage of the flexible structure that a computer affords, with a hypertext format and flexible hierarchical structure, allowing the user to explore the resource at will via links to related entries (Somers, 2003: 19). HAMT is the opposite of MAHT, as in this kind of translation the responsibility rests on the machine and human input is necessary only as an assistance. As defined by Sin-wai Chan, HAMT “refers to the human translator supplying limited information to „fill out“ the machine

translation” (Sin-wai Chan, 2004: 99). The involvement of human input can occur at three stages of the translation process: “pre-editing” and “post-editing” and “interactive”. Pre-editing involves foreseeing problems that a machine may encounter in the process of translation, deciding whether a particular text is possible to be processed. It can therefore, as claimed by Hutchins and Somers include: “the identification of names (proper nouns), the marking of grammatical categories of homographs, indication of embedded clauses, bracketing of coordinate structures, flagging or substitution of unknown words” (Hutchins & Somers, 1992: 151). In this process a language of the ST is reformulated in a way to include only phrases that would be understood by a machine. The use of so called “controlled language” has to be adopted as computers not always can deal with the problems such as ambiguities or homographs. The translators who pre-edit a given text thus, have to put attention to the structures and terminology that can be problematic for a machine. Post-editing, as the name suggests, deals with the text that has already been translated by a machine. Veale and Way define it as the “term used for the correction of machine translation output by human linguists/editors” (in Allen, 2003: 297). Wagner adds that “post-editing entails correction of a pre-translated text rather than translation „from scratch“” (in Allen, 2003: 297). In the post-editing process, a translator’s task is to correct output of the MT system, improving every grammatical and lexical error.

Interactive MT systems require human aid while the translation is under way. When problems that a machine is not able to examine on its own occur (such as ambiguities), the system prompts the user to resolve it. It must be pointed out, however, that to correct the mistake the translator has to be fluent both in SL and TL.

6 - MT in the real world

Different electronic translation tools may be divided into MT systems, translation support tools, and online systems. It should be considered, however, that not all of them exclusively refer to MT.

MT systems:

- *For home use* (e.g personal ones, used by the general public).
- *For Internet/Web* (e.g used to translate documents on the Internet, electronic mails, Web pages, etc.).
- *For professional use* (e.g used by professional translators).

Translation support tools:

- *Electronic dictionaries*: (mono or bilingual, technical or encyclopedic).
- *Translation Memory systems*: Translation Memory – a database that stores earlier done translations, allowing the retrieval of them. The efficiency is increased by allowing the reuse of previously translated phrases and sentences. The most well known MT are: Déjà vu, SDL Trados, SDLX, Star Transit.
- *Localization support tools* – they provide several translation-related applications on one common platform.
- *Alignment tools* – they are responsible for creating a translation memory database based on an already translated document by matching segments (phrases) of the source language version to the translated version.
- *Terminology management systems*: their task is to help to preserve unity of vocabulary throughout the translated text, e.g. by displaying the previous translation for every new sentence.
- *Translator's workstations*.

Online systems:

- *MT systems* (e.g translation service via the Internet/ mobile phone, with or without human post-editing).
- *MT portals* (e.g. services on the Internet providing access to a number of MT services and/or to information about MT systems).

(Adapted from Hutchins, 1995)

In order to decide whether a human translator's work may be facilitated by the use of Computer Assisted Tools, they should consider the disadvantage that will be mentioned in subsequent chapter and advantage that will be discussed in the following passage.

Speed. This is an area in which machines definitely excel human translators. Having been able to produce hundreds of pages of output per day they are much more efficient. It must be remembered, however, that the output is raw, crude and it needs more or less extensive post-editing. Therefore, the utility of such translation is limited. It can be used to get an imprecise translation that reveals what the text is about without everything being translated correctly. Oftentimes it can be more important to get the result without delay not to get a translation of good quality, and this is one of the areas where MT may excel human translators.

Subject matter. Here the machine may as well prove to have an enormous advantage. Mainframe systems (PC commercial programs to a lesser extent) make use of extensive dictionaries and terminology databanks, the building of which has been work and time-consuming. While translating a highly specialized text on, for example, nuclear physics or aeronautics a computer program may easily find appropriate equivalents of sophisticated words, which to a human translator would require a lot of searching through technical or encyclopedic dictionaries.

Accuracy and consistency of vocabulary. Here, yet again, machines may prove to be incredibly helpful. MT system (provided it is equipped with an extended, domain-specific dictionary) or a CAT tool (appropriate for the task that is to be performed) may save an excessive amount of time and hideous work in, for instance, reviewing the outcome of translation to check the unity of vocabulary. When using one of the above mentioned tools, the work becomes much easier. Computer programs can display the previous translation for every new sentence, so that the translator does not need to remember how they were translated previously. This advantage of using specialized computer programs, capable of keeping the consistency of vocabulary is especially noticeable when large commercial jobs (usually with a deadline) are taken into account.

In conclusion, machine translation tools may be beneficiary for technical/informative texts, texts containing a lot of repetitions, texts where it is important to keep consistency, and in case of the need to complete the translation quickly. Although in most cases the outcome produced by a machine must be followed by human translators correcting the results, machine translation excels when it comes to the reduction of the costs and time, together with maintaining consistency and accuracy of the vocabulary.

7 - *Skopos Theory and Nord's model of translation-oriented text*

From 1978 Reiss and Vermeer's postulate says that the intended purpose of the TT, not the function of the SL should determine the translation methods and strategies. In the same year, the postulate was reformulated into the *skopos* rule, which later became the main component of Vermeer's general translation theory (Reiss & Vermeer in Nord, 2005). It reflected a shift from formal and linguistic translation theories to a more socioculturally oriented concept of translation. In German Skopos Theory, the *skopos* is known as a target-text purpose, by Nord being characterized as "a more or less explicit description of the prospective target situation" (Pym, 1993). While the *skopos* rule is the main principle of the Skopos Theory, there are also other subordinate rules, namely, coherence rule (intra-textual coherence) and fidelity rule (intertextual coherence) raised by Vermeer; as well as the loyalty principle put forward by Nord.

According to Vermeer, the coherence rule means that “a translation should be acceptable in a sense that it is coherent with the receivers’ situation” (in Nord, 2001: 32). The translator, therefore, in order to produce a comprehensible and readable text for the TRs has to take their needs, expectations, and background knowledge into consideration. Another rule is “intertextual coherence” or “fidelity,” as called by Vermeer. It is an amount of information that is shared by the ST and the TT (both texts should have a close relationship). In other words, the fidelity rule concerns intertextual coherence between the ST and its translation. Those two rules, together with the skopos rule are crucial in the translation process, yet their importance is not on a par. “Intertextual coherence is considered subordinate to intratextual coherence and both are subordinate to the Skopos rule. If the Skopos requires a change of function, the standard will no longer be intertextual coherence with the source text but adequacy or appropriateness with regard to Skopos Theory. And if the Skopos demands intratextual incoherence, the standard of intratextual coherence is no longer valid” (Nord, 2001: 32-33). The fourth rule introduced into the Skopos Theory is the Loyalty Principle. It was created by Nord in 1989 in order to formulate the scope of responsibility that a translator has towards their partners (clients, users of the translation, the author of the ST and the translators themselves). The Loyalty Principle does not say that the translators always have to do what the other parties expect, yet they have to resolve misunderstandings or communicative conflict that may occur due to different translational concepts. Consequently, a translator has to preserve loyalty towards the author, reader as well as the text, but not necessarily has to be loyal to the language that is being used.

Besides the Loyalty Principle, Nord had yet another contribution to the Skopos Theory. Namely, she produced a model of translation-oriented text analysis that is not characteristic for any specific source or target language, does not depend on the level of proficiency of the translator and may be used both for translation from and into native language. As argued by her, the model was a reaction to the problem connected with the functions of SL and TL. It evolved from the fact that there is no point in venturing into the previous function of the ST if the two texts are supposed to serve different purposes. Therefore, while looking into the purpose of the ST, the translator “compares this with the (prospective) 'function-in-culture' of the target text required by the initiator, identifying and isolating those source-text elements which have to be preserved or adapted in translation” (Nord, 2005: 8). The initiator is a person defining the TT purpose, nevertheless it is a translator that is responsible for the final text as he or she is competent to judge whether the initiator’s requirements are possible to be fulfilled. Moreover, the translator is perceived (ideally) as having the perfect command of both target/source language and culture, being able to correlate ST reception with TT creation. Translation, as every human

action has its purpose that only a human translator, equipped with the above mentioned features may handle. As far as the Machine Translation is concerned, the systems are not able to analyze a text in order to change its function or the impact that it serves on the source reader. Along with the above mentioned problems, there are also other difficulties that are dealt with in the next subchapter.

8 - Problems of Machine Translation

A vast majority of translators work with a language that is not their mother tongue, which as a consequence may result in mistranslation, called by Alan Duff “a third language” (in Korzeniowska & Kuhiwczak, 1994: 145). It involves an incorrect use of a TL in the process of translation, making the sentences grammatically or lexically unnatural for a native speaker. This may occur either due to the lack of knowledge of the TL or inadequate acquaintance with the target culture. The translation itself is a difficult task because of the fact that language is produced in a number of different ways. According to Gross, language is not only used as a means of communication but has also other functions such as:

- demonstrating one’s class status to the person one is speaking or writing to;
- simply venting one’s emotions, with no real communication intended;
- establishing non-hostile intent with strangers, or simply passing time with them;
- telling jokes;
- engaging in non-communication by intentional or accidental ambiguity, sometimes also called “telling lies”;
- two or more of the above (including communication) at once (Adapted from Gross, 1992: 110).

The translator’s task is more than translating the ST into the TT. According to Arnold (2003), depending on the purpose the text is supposed to serve and the audience that it is produced for, translation has to be persuasive (for instance, when it comes to the translation for the travel agency), clear (for instance, when it comes to the translation of important documents, not to confuse the reader), unambiguous, interesting, sometimes even poetic (for instance, when it comes to the translation of poems or literature). The translators are required to use their imagination and act as cultural mediators, conveying the meaning that may not necessary be so obvious for the target readers. If demanded by the initiator, they have to produce a text that would have the same influence on the TA that it had on the SA and also, as mentioned by Arnold,

“where readers of the target text are expected to share the same knowledge and culture as the readers of the source text” and “where there are no problems due to new terminology” (Arnold, 2003: 121). The aim of MT since the beginnings of its existence was to automate this process. It was achieved in some languages and domains of language, yet there is still a number of problems that the machines encounter in the act of translation. According to Gross, there are mainly two reasons why computers are not able to produce a perfect translation, “one rooted in the cultural side of language, the other in considerations related to mathematics” (Gross, 1992: 109). Arnold (2003) on the other hand, distinguishes four practical limitations that are connected with those mentioned by Gross. The problems are based on the inability of the computers to:

Perform vaguely specified tasks - Machines may encounter problems when they deal with tasks that are specified in a vague way because their whole knowledge is based on the data, stored on a hardware. The rules that are entered into the computer should be as precise as possible yet, it is more problematic that it may seem. According to Arnold, one may have difficulties in trying to find “sufficiently precise formulation of intuitively very straightforward ideas like ‘in English, the subject usually comes before the verb’” (Arnold, 2003: 121). The computer would not be able to process the word “usually” having thus, problems with a proper translation. In addition, even if the rules are formulated clearly enough, there are still chances that a machine would not manage to understand and apply them.

Learn things (as opposed to being told them) - The second problem is that of inability of computers to master new concepts. It is connected with the fact that, as claimed by Arnold (2003), learning involves “classification” and “genuine creativity,” that the machines lack. The computers are able to acquire certain amount of knowledge that may be useful in particular tasks, nevertheless there is no one procedure that they may follow in order to learn every concept essential for the MT.

Perform common-sense reasoning - Another problem that is out of reach for the computers, is that of performing common-sense reasoning. They are not able to process certain bits of information as they do not have so called “real-world knowledge,” thanks to which human translators are deeply familiar with the world around them. Without the ability to process certain data, that are obvious for a human translator, a MT may be awkward for a target reader.

Deal with some problems where there is a large number of potential solutions - Free choice is another factor, posing fundamental difficulties for the machines. If they were to choose between many equivalents of a certain word, without being instructed which one is correct in a given context, they would simply fail to choose the proper one. What is more, the time of translation would extend with the number of processed words and their translational possibilities.

There is also a wide range of other problems, mentioned by Hutchins and Somers (1992) that the machines may encounter in the process of translation. The system may not be able to deal with the frequent occurrence of homography, compounds and nominalization or processing of interrogatives, imperatives, subjunctives. Problematic structures that are also enumerated include complex sentences, coordination, ellipsis, fragmentary sentences, telegraphic phrasing, complex noun phrases. The above items, occurring in the ST may be problematic for a machine however, everything depends on the system and the software that is used to translate them.

9 - Conclusion

Translation involves the application of linguistic knowledge from various fields, it deals with morphology, syntax as well as semantics. The translators have to adapt the style and register of the ST to the request of the initiators but also display the knowledge of the source and target culture. They encounter a number of difficulties in the process of translation, yet it is even more troublesome for the machines. As there is no skopos in MT, computers are not able to analyze texts in order to change its function or influence the SR. Therefore, even though it is possible for them to deal with translation procedures (mainly dissolution of linguistic problems), they cannot undertake any translation strategy. What is more, machine transcoding is based on mechanical frame-frame substitution, which means automatic replacement of source words with their target equivalences. The lack of real world knowledge does not allow for resolving of semantic and syntactic ambiguities. Additionally, computers are not capable of dealing with a large number of potential solutions, learning things on their own, and performing vaguely specified tasks.

Machine translation tools may be beneficiary in case of texts with a number of repetitions, when there is a need of keeping consistency or to complete the translation quickly. MT is useful when it comes to speed and saving money, yet the current technology is still not sufficiently developed to allow computers to produce an output that would not require a human assistance, and no one knows if this goal will ever be attainable in the future.

LIST OF ABBREVIATIONS:

MT- Machine Translation

SL- Source Language
TL- Target Language
ST- Source Text
TT- Target Text
TW- Target Word
COT- Context-oriented Theories
TOT- Linguistics/Text-oriented Theories
ALPAC- Automatic Language Processing Advisory Committee
LRC- Linguistic Research Center
FAHQT- Fully Automatic High Quality Translation
MAHT- Machine-Aided Human Translation
CAT - Computer-Assisted Translation

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