Reflections about artificial intelligence and interlingual translation In times of robots and computers

Lubomir Hampl[1]

[1]University of Silesia in Katowice
Katowice, Poland

Abstract— **In this article, the author on the issue of whether the human brain can be matched by artificial intelligence in the field of broadly understood interlingual translation, implemented both in written and oral expression. So far, computers are not yet fully adapted to be able to freely translate texts in which, for example, a metaphor or idioms are used, because these processes can only be understood by the human brain, distinguishing linguistic pictures of the world of different comparatively compared languages. On the other hand, all kinds of processors, their memories and technical equipment, unfortunately, conceptually do not distinguish these processes, because they cannot think in categories like a human. They are programmed with an algorithm, which means that not all translations are handled well by the artificial intelligence in accordance with the accepted and applicable standard, language usage and convention for each native // national language used by users of a specific language area.**

Keywords— artificial intelligence, robot, Czech and Polish, translation, metaphor and phraseology, machine translation.

I. INTRODUCTION

Artificial intelligence thanks to the scientific and technical revolution of the late 20th century at the beginning of the 21st century, it is constantly, inexorably, moving forward. It can proverbially... in the blink of an eye, calculate or calculate various sets, map and, to some extent, manipulate various situations according to a specific algorithm, and with modernized and modernized robots (e.g. modules, programmers, memories etc.) processors) are in this field, more and more efficient and more efficient. IN At this point, it is worth paying attention to three key concepts: algorithm, robots and computational linguistics:

1) An algorithm is a sequence of instructions that tell a computer what to do. The use of appropriate algorithms - as Alicja Sztuk (2018) points out - is intended to allow the software to automate the process of acquiring and data analysis, v to improve your own system. The process of machine learning, although compared to human learning, is different because machine learning itself consists primarily in analyzing huge amounts of data, drawing conclusions based on this data and detecting even the smallest dependencies between these data, the so-called input data.

2) The fact that we are recalling exactly in at this point the concept of robots , so with Czech writer Karel Čapek would certainly be extremely happy about this fact , who in his science fiction drama entitled RUR (Czech: Rossumovi Universal Roboti – Polish Rossum's Universal Robots) invented this lexeme, a this name in form of the lexeme robot // robotics is now boldly used or freely used by the whole world.

This all happens thanks to the development of computational linguistics, which in turn is applied through the use of information systems to analyze and understand language in speech and writing. Computational linguistics deals with, among others, improving automatic translations, speech recognition systems and speech synthesizers. All these activities translate into real business activities.

II. ARTIFICIAL INTELLIGENCE AND TRANSLATION

The described artificial intelligence is undoubtedly very popular today and *we can certainly expect that* this trend will most likely not change in the future. over the next few years. These are undeniable facts. Broadly speaking, the primary goal

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of artificial intelligence is the simulation of human intelligence by a machine - commonly known as a computer.

However, as a linguist, I look at this issue from a different perspective a completely different perspective. It concerns broadly understood translation studies, i.e. translations from one language to another. The question that arises in At this point, the question may be: whether artificial intelligence and In How well *will it cope with translation in the era of computers? Is the quality – and not just the quantity and speed – of such translation satisfactory? meets the requirements of a written/spoken text?*

Artificial intelligence and machine learning are the two most important technologies that influence translations today. Artificial intelligence and machine learning allow for automatic translation of natural language into another language. Previously, translation was done by people who had to know both languages and have translation skills. Artificial intelligence and machine learning, as he points out (https://www.advance-mk.pl), help in translation because these systems are able to learn and adapt to the context, language and vocabulary. For example, machines can learn from large collections of texts, such as books or articles, to understand what words are related to each other, what their meanings are, and how they are used. I think that this is, however, to a limited extent, because the machine (computer) does not feel feelings, empathy and emotions that are transferred through metaphors and phraseological connections to colloquial vocabulary, so such a translation would always have to be verified by a human, as a being who can psychologically sense a state of significant mental agitation.

of the development of the idea of artificial intelligence is machine learning, or machine learning. The term machine learning (cf. Sztuk 2018) was introduced to emphasize the possibilities of practical application of achievements in in the field of artificial intelligence. This is about creating automatic systems capable of (self-)improvement using accumulated experience (data) and acquiring new knowledge (practical skills to perform specific activities) on this basis.

The so-called machine translation translation) or the term " automatic translation " is, as we know, a field of computational linguistics, i.e. a science dealing with issues such as artificial intelligence or the use of language corpora . Czech linguist Edvard Lotko (2003) occupies in a cautious stance on this issue, emphasizing that: překlad strojový to je '(polo) automatický translation omezeného (zvl. odborného) textu help počítačových program; této studio oblast problematiky ' – [transl. Polish: machine translation is '(semi-) automatic translation of limited (especially professional) text using computer programs; this is the field of study of the above-mentioned issues'].

Regarding computational linguistics, a relevant example of translation technology here is real-time automatic translation, also called interpreting or consecutive translation. This is another innovative translation technology. Thanks to it, spoken translation is possible almost immediately, which is especially useful during conferences or meetings with clients from different countries. This technology works by recognizing

speech and translating it into the selected target language in real time. This is possible thanks to the use of advanced artificial intelligence algorithms, including machine learning and neural networks, which allow for fast and accurate translation. The simplest Polish-language definition of machine **translation is provided by** the Dictionary of the Polish Language, vol. III., (Szymczak 198) explaining that it is: a translation performed using an appropriately programmed electronic digital machine - that is, a computer in the modern sense. WITH From a historical point of view, we can recall the experimental beginnings carried out on the 7th January 1954, when specialists from IBM with scientists from Georgetown University implemented the experiment by obtaining the first translation - about 60 sentences - from Russian into English using a computer. The first example of machine learning may be the project of Arthur Samuel from IBM, who in the years 1952–1962 developed a program for training chess players. This caused in significant development of automatic translation. Many different methods were gradually developed, one of which was: many are, for example, direct translation technology. Also known are the so-called syntactic translation systems and surface semantic transfer systems. There are also so-called interlingual automatic translation systems using a universal intermediate language (so-called interlingual), where the translation is two-stage and begins with a translation from source language into the mentioned interlingual, a ends with translation from interlinguals into the target language. We have also dealt with over the years translations created on the basis of approximation i similarities to others. We can also mention a popular system, the so-called statistical translation, based on models created based on the analysis of a corpus of parallel texts in given language pair.

However, it must be clearly emphasized that no artificial intelligence system incl statistical translation mechanisms (see e.g. Google translate) cannot capture the metaphorical-metonymic similarity operating on the basis of allegory. The cognitive school has proven (Langacker 1987, 1995, 2003; Bartmiński 2006, 2007) that artificial intelligence does not work like the human brain. Computers in they cannot cope satisfactorily with, for example, phraseological units and idiomatic and with the metaphor mentioned above. This metaphor, as the most perfect form of figurative use of language, is traditionally considered the most serious problem in translation, both by those who tried their hand at translating poetry and by those whose goal was to theoretically describe the translation process (cf. Tabakowska 1995, 2001, 2008, 2009).

The previously mentioned phraseological units - among many functions - play two basic roles: they complement the dictionary system of the language they multiply the stock of synonymous lexical means. However, one of the basic mistakes when translating phraseological units and collocation is the mapping of the original language using dictionary equivalents, which are most often given without context (i his explanation) . It should be mentioned that the above-mentioned location when translated literally sounds not only unnatural to users of a given language, but even funny and ridiculously. In such

situations, there is a deviation from compliance with adopted and coded usage and with the applicable linguistic convention for each national language. Therefore, the translator should be particularly sensitive to collocations that have their own meaning, sign and symbolic conventions in each language. stereotypical.

Later, with the help of idealized cognitive models (Lakoff 1987) or facets (Wierzbicka 1993, 1999, 2006, 2007), taking the form of a specific structure (Lakoff 1986), also called or characterized as an experience tablet (Lakoff , Johnson 1988), cognitive -linguistic portrait of a person , in the process of which the subject lexis that we translate in metaphorically (Lakoff , Johnson 1988, 2002). The metaphor presented is not considered a violation of the rules governing linguistic competence. Cognitivists see metaphor as a means that enables the conceptualization of increasingly abstract and elusive areas of experience through the familiar and specific. Therefore, metaphor - as John Taylor (2001) draws special attention to - is motivated by the desire to understand, and is based not on the violation of selection constraints, but on the conceptualization of one cognitive domain using components generally combined with another domain.

Considering the semantic description of linguistic expressions, it can be noticed, as Renata Grzegorczykowa (2001) points out, that the so-called the "portrait" of a word also includes "axiological and emotional elements, as well as stylistic properties of words", which computers and Artificial intelligence is not yet in can neither detect nor distinguish.

Comparing two typologically and genetically close languages (such as Czech and Polish), we can say that they have been thoroughly analyzed in lexical, terminological and textological terms (Lotko 1986, 1992, 1997; Damborsk ý 1977 , 1994; Orłości 2003, 2004, 2009). However, it is worth remembering that in translation studies (written and oral) v first of all, we must take care of the so-called triads translation process (i.e. o analysis – interpretation – translation) – (Kufnerová 2009) , which automatically translates into the lexical and terminological effect in the national nomenclature used. On the basis of the presented excerpt not only of intralingual comparative examples, but above all of the exposure of interlingual terminological assessments, language researchers have shown how the occurring objects, concentrated in our case around various research domains, are present in the language and culture, especially in the Slavic linguistic area, i.e. . in Czech and Polish.

Such selection is one of the basic dimensions of imaging. As Elżbieta Tabakowska (2001) points out, it concerns the initial selection by the conceptualizer of one or more cognitive structures (conceptual domains) that make up a given image. This dimension refers to a phenomenon that is traditionally referred to as "semantic synonymy." This term, v unlike "stylistic synonymy", it means closeness of meaning. What we are dealing with here is varying degrees of cognitive clarity, where a person senses, distinguishes and correctly evaluates the appropriate use of specific lexical units, which we cannot say about computers, robots and artificial intelligence, because they do not have such properties or learned abilities. They have

no feeling, emotions, feelings and empathy, they are just in in the simplified sense of the word, an ordinary system without a "soul", a zero-one system or algorithm ($0 \rightarrow 1$).

In *each* translation used, the factor of cultural competence of the translator plays an important role due to the fact that he or she must sense whether the final recipient will know the word in question or whether there will be a need to explain this sequential allusion (directly in text or in footnote). The ideas are translated by Fr in the same work // text sometimes differ quite fundamentally, this is then reflected in selecting specific solutions and In the final shape is decided by lexical-textological form of the translated text. The translation described is called: signs of creativity, which gives the translator the right to be inventive, a In in some cases it can be interpreted quite freely. We should therefore treat translation as a means of building mutual understanding between the participants of the source culture target. It is also worth mentioning at the end of our considerations that the process of translating Czech and Polish lexical units essentially concerns specific approximations and the formal and aesthetic reconstruction of the equivalence of variously referenced research domains in the target language texts.

Returning to the zero-one algorithm ($0 \rightarrow 1$) it is about: to put it briefly, first of all about this is to prevent errors (it is probably better to use the term "shortcomings" - LH's own comments) resulting from the lack of analysis of the source text (syntagmatic translation) or erroneous interpretation of the text (cf. Hejwowski 2009) . When trying to translate a text into another language, the translation is quite often inconsistent and internally contradictory, because the translator must cope with both at the same time in parallel three mutually contradictory (colliding) ways aspects of their manifestations (cf. Lebiedziński 1981), which are:

aspect of fidelity, i.e. faithful reproduction of the content of the original,

aspect of correctness, i.e. proper and linguistically correct presentation of the content in the translation,

the aspect of reality or, to call it differently, the aspect of reception, i.e. to constantly take into account non-textual circumstances - i.e. the cultural, historical, geographical and social context of the translation, convention, usage and linguistic norm, and also constitutionality.

For a broader consideration of written translation, see e.g. Krzysztof Lipiński (2006, 2004), Elżbieta Tabakowska (2008, 2009), Daniela Müglová (2013), Zlata Kufnerová, Milena Poláčková, Jaromír Povejšil, Zdena Skoumalová, Vlasta Straková (2003) and others.

Let us pay particular attention to maintaining faithfulness in... the semantic, stylistic, symbolic, emotional and expressive plane rhythmic and sound. The immanent postulate of an equivalent reception of the original by the adept A and translation by adept B is possible – although with difficulties - to be achieved by humans, but for now still not possible to be fully achieved by artificial intelligence (cf. the scope of mentality, ideas, associations, experience, traditions, etc.).

The main problems encountered with machine translation

are:

- ambiguity and variability of meaning of words determined by historical and cultural factors,
- metaphorical and allegorical,
- synonymy and different conceptual scope of words,
- homonymy,
- syntactic differences in the source and target languages,
- no consideration of the type of translated content.

At the end of our considerations, it is worth mentioning that some psychologists, linguists and computer programmers, more openly than others, compare the above-mentioned key concept of "human cognition" to the work of a computer, emphasizing at the same time that "this cognition" is simply "calculations" performed by "hardware" of the brain operating under the control of mental "software" (MacCormac 1985, Taylor 2001, Hoffman 1985, Taylor 2007).

Summarizing these issues, we can say that the introduction of translation technology that uses artificial intelligence and machine translation has both advantages and defects. It can be said that translation is faster, cheaper, and a some even emphasize that i more effective. With the help of machine translations, the translation of a large amount of text or documents takes much less time than in the case of case of manual translation. Also with From an economic perspective, the advantage is that machine translation is cheaper. IN compared to traditional translation services, the use of translation technologies with artificial intelligence and machine learning is incomparably much cheaper than w professional translation agencies. Thanks to this, companies and Individuals who need translations on a daily basis can save large sums of money. Question in At this point, what naturally comes to mind may be: whether speed and the cheap price of the translation service corresponds to the quality and content of the output text, incl which is hidden, e.g. allegory or feelings or phraseological or idiomatic connections?

It is worth noting, however, that despite numerous advantages, the translation from the use of artificial intelligence technology is not perfect. Some words or phrases are still not translated accurately, a machines are sometimes not in able to understand the context in full. That's why it's important to keep using the services of professional translators or translation agencies who are in able to improve machine translations, a In if necessary, make appropriate corrections or adjustments to the translated text.

III. SUMMARY

Concluding our considerations, we can say that the described translation technologies from using artificial intelligence and Machine (computer) translation continues to have a major impact on the translation industry. Thanks to them, translation is undoubtedly faster, cheaper and – as some researchers believe – even more accurate. Although machine translations will not replace... full human translators, they are a valuable tool that can facilitate and speed up the translation process.

The goal of artificial intelligence is primarily to teach computers what humans currently do better, and teaching is arguably the most important of these skills. Without it, no computer can keep pace with humans in the long run; because only thanks to the ability to learn can one acquire further information, which can translate into knowledge, including the applicative one , as well as skills and abilities (Domingos 2015).

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