

Dominika Romaniuk-Cholewska

Doctoral student, English Philology

University of Białystok, Poland

e-mail: d.romaniuk-cholewska@uwb.edu.pl

ORCID: 0000-0002-9920-1050

THE MACHINE TRANSLATION (MT) OF PROVERBS IN THE ENG-PL LANGUAGE PAIR

Abstract. The translation of proverbs is an act of cross-cultural transmission that plays a vital role in the preservation and dissemination of shared knowledge within a community. While traditional dictionaries are invaluable in the translation of sayings, there is a growing trend to replace them with machine translation (MT) programmes. Although some studies have investigated the quality of machine translation of proverbs, research in this area is relatively limited. The study evaluates the quality of machine translation of 18 proverbs in Google Translate, DeepL, PONS, and the two most recent large language model tools, ChatGPT-3.5 and Google Bard. The research is conducted with two hypotheses: first, human translator supervision is essential in the case of non-literal translations such as proverbs; second, the role of the translator is changing, and in its current form, it is more often reduced to an attentive post-editor. The paper aims to achieve two objectives: first, the evaluation of the quality of machine-translated proverbs in the EN-PL pair, and second, the analysis and classification of errors occurring in machine translation of proverbs in the EN-PL pair. The research revealed that AI tools presented the highest accuracy for proverb translations, with scores of 61% (ChatGPT) and 44% (Google Bard) in Polish-to-English translation and 38% (ChatGPT) and 50% (Google Bard) in English-to-Polish translation. Furthermore, the study revealed errors typical of translation tools based on large language models such as ChatGPT and Google Bard.

Keywords: Proverbs, translation, machine translation, machine translation errors, machine translation tools, ChatGPT, Google Bard.

Introduction

As Kordys (2001: 135–162) noted, proverbs in all cultures are an essential communicative and educational tool representing the common knowledge of a given community. Proverbs and sayings are listed in separate bilingual dictionaries facilitating translators' work, such as *the English-Polish*

and *Polish-English Dictionary of Proverbs and Sayings* by Czesław Pająk, or the *Dictionary of Proverbs “Przysłownik”* by Katarzyna Kłosińska. However, there is a trend among translators and translation trainees towards replacing paper dictionaries with machine translation (MT) programmes (O’Neill, 2019: 154–177). As the research by Mieder (2004) and Szpila (2003) indicate, proverbs, although associated with the past and tradition, are still used today. With the increasing popularity and usefulness of such tools, it is reasonable to examine the quality of the translation of proverbs in three popular machine translation programs: Google Translate, DeepL, and PONS, as well as on artificial intelligence (AI) platforms – Chat GPT-3.5 and Google Bard. Eighteen Polish proverbs and their English equivalents were selected for analysis.

This paper builds upon previous work to address this gap and contributes to the ongoing discussion about the role of humans as translators in an era of increasing reliance on artificial intelligence. It aims to investigate the machine translation of proverbs in the ENG-PL language pair. This will entail the analysis of the translation performance of MT systems, the evaluation and categorisation of occurring errors, and the formulation of potential solutions to enhance their overall performance. The study will consider the context-sensitivity, creativity, and cultural aspects of proverbs and explore how these factors can be incorporated into MT systems to produce more accurate and culturally appropriate translations. Overall, this research will contribute to the development of more effective MT systems that can handle the challenges of translating idiomatic expressions such as proverbs. The article is divided into four segments: background, methodology, results and conclusions, with a discussion and further study directions. The first part introduces previous studies concerning aspects differentiating human and artificial intelligence in terms of perceiving language and translation. It also summarises research on MT of proverbs in various language pairs. The second segment is devoted to the methodology employed to conduct the study. The third part consists of the analysis of research results. The paper finishes with conclusions, a discussion, and some suggestions for future research in this area.

Literature review

Although MT has made significant progress in recent years, it still faces many challenges when translating idiomatic expressions such as proverbs. Proverbs are an essential part of language and culture, and their transla-

tion requires understanding the underlying meaning and cultural context. As Pinker (2005: 9f.) observes, humans have a unique ability to understand language in context, generate novel sentences, and use language creatively. In turn, AI systems struggle with these tasks, and their ability to generalise new examples of the same underlying pattern is limited (Marcus, 2018: 5–10). Chomsky (2013: 33–49) notes that AI systems often lack the innate knowledge of language and the world that humans possess, which makes it difficult for them to understand the underlying meaning of sentences. Additionally, Clark (2013: 181–204) highlights the importance of using context and prior knowledge to guide language processing and production, which is a challenging task for AI systems, which rely primarily on statistical patterns in large datasets.

Some research on MT of proverbs was conducted by Bouhadiba (2016) and Al-khresheh & Almaaytah (2018). They explore the linguistic and cultural obstacles machine translation faces when translating proverbs and idioms. Bouhadiba (2016) focuses on Google and Systran's translations of Arabic proverbs, highlighting the stylistic, syntactic and semantic errors in MT, while Al-khresheh & Almaaytah (2018) analyse the accuracy of Google Translate in translating English proverbs into Arabic. Spencer (2018) presents a phrased-based statistical machine translation approach to translate Spanish proverbs into English without changing their intended meaning. Meanwhile, Shao et al. (2018) introduce a new evaluation method based on a list of literal translations of Chinese idioms to assess the quality of idiom translation in machine translation systems. Overall, these studies shed light on the challenges and limitations of machine translation in conveying the cultural nuances and non-literal interpretations of proverbs and idioms.

Given the challenges of MT in dealing with idiomatic expressions, there is a need for further research to develop more effective approaches to translating proverbs in different language pairs.

Methodology

Research material and tools

For the study, eighteen proverbs were selected from a more extensive list of 56 popular sayings listed by Szpila (2003). Szpila's study was an attempt at establishing the paremiological minimum of Polish students at Jagiellonian University in Kraków; it thus contains proverbs which are widely known and are an important part of the linguistic (and cultural) com-

petence of native speakers of Polish. They were later presented with English equivalents retrieved from Pająk's *Dictionary of Proverbs and Sayings. English-Polish. Polish-English* (2007) in an analysis of proverb introducers conducted by Rozumko (2011). For the present analysis, only those proverbs were selected whose equivalents found in the aforementioned dictionary are actual sayings and not translations. Thus, the popularity factor of the selected elements refers only to Polish and is undefined in English.

The selected proverbs were subsequently translated using the following tools:

- Google Translate – a machine translation service that uses neural networks to translate text, documents and webpages from one language to another (*Understand Your World and Communicate Across Languages*, n.d.).
- DeepL – a machine translation tool that employs a neural network architecture. It learns to comprehend the nuanced meanings of words and translate them (*Why DeepL?*, n.d.).
- PONS – an online dictionary that provides a machine text translation service (*PONS Translator | Dictionary-enhanced Text Translation*, n.d.).
- Chat GPT-3.5 – a multimodal programme that demonstrates human-level performance on a variety of professional and academic criteria (*GPT-3.5*, n.d.).
- Google Bard – an experiment based on Google's artificial intelligence which can generate text, translate it into other languages and create different types of content (*Before You Continue*, n.d.).

The above MT tools were selected based on the responses of translation students on the most frequently used tools in the translation process (Cholewska, 2021). Two additional tools not considered by students at the time but added to the current study are Chat GPT-3.5 and Google Bard. Those instruments were chosen due to their growing popularity and presence in public discourse.

Hypotheses and objectives

The study tests two hypotheses:

1. In the case of non-literal translations, such as proverbs, human translator supervision is necessary.
2. The role of the translator is changing, and in its current form it is increasingly reduced to that of an attentive post-editor.

The research aims to assess the quality of MT in PL-EN. It also analyses and classifies errors occurring in the MT of proverbs in the above language pair.

Data analysis

In the present study, the proverbs were subjected to machine translation without being set in context. This information is significant as it can be assumed that the contextualisation of sayings would yield different outcomes with MT tools.

The data were reviewed for qualitative analysis and error taxonomy following the procedure outlined by Popovic (2018: 4). As the procedure was designed for non-literary texts, the author used equivalents available in both languages as reference texts, thus omitting the manual translation step. The process of data analysis was as follows:

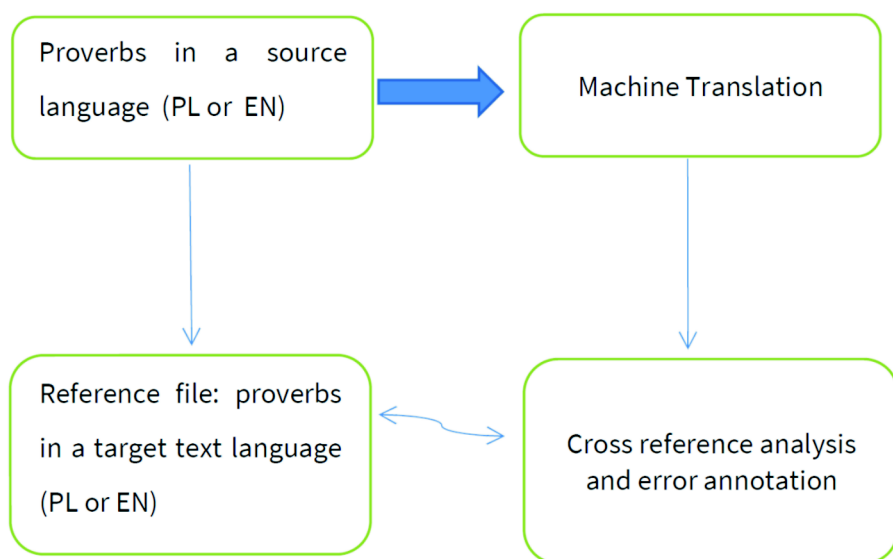


Figure 1. Process of data analysis based on Popovic (2018:4)

First, the eighteen proverbs selected for analysis were translated with the use of the above-mentioned tools. The translation process was conducted twice, from Polish to English and then from English to Polish. Second, errors occurring in MT of proverbs were categorised according to the general error typology, designed by Popovic (2018:5), in a way that can easily be adapted to different tasks and language pairs. For the purpose of the study, the category of semantic errors in multi-word expressions was expanded to third-level categories of literal meaning and wrong literal meaning of figurative language, synonym and wrong synonym. Table 1 presents a detailed overview of the employed MT error taxonomy.

Table 1

Error taxonomy adapted from Popovic (2018:5)

Level 1	Level 2	Level 3
Lexis	mistranslation addition omission untranslated should not be translated	Terminology e.g. <i>When she was ill she couldn't take care (of) her baby.</i>
Morphology	inflection	tense, number, person, e.g. <i>I <u>have eaten</u> leftovers this morning.</i> case, number, gender
	derivation	POS verb aspect, e.g. <i>Nice handwriting these days <u>are</u> a great art.</i>
	composition	e.g. <i>The birthday party, which was organised for Judy this week.</i>
Syntax	word order phrase order	e.g. <i>I don't know very well Białystok.</i>
Semantic	multi-word expressions collocations disambiguation	<u>Literal meaning of figurative language, wrong literal meaning of figurative language, synonymical expressions, wrong synonymical expression</u> e.g. <i>Thank you from the mountain.</i>
Orthography	capitalisation punctuation spelling	e.g. <i>Let's go Summy.</i>
Too many errors		

Most of the examples come from Kliffer (2008: 53–67), and there are two of my own examples.

Results

The outcomes were classified according to the frequency of errors and arranged in descending order of occurrence.

Translation from English into Polish

1. Literal translation error

The most common error in translation from EN into PL was the literal translation of figurative language, as shown in Table 2. This error occurred

The Machine Translation (MT) of Proverbs in the ENG-PL Language Pair

16 times in PONS, 15 times in DeepL, 11 times in Google Translate, eight times in ChatGPT and twice in Google Bard. It was also the most common type of error recognised in “standard MT”, i.e. performed by Google Translate, DeepL and PONS.

Table 2

Literal translation error EN-PL

Proverb	Dictionary equivalent	Google Translate	DeepL	PONS	ChatGPT 3.5	Google Bard
Every cloud has a silver lining.	Nie ma tego złego, co by na dobre nie wyszło.		Każda chmura ma srebrną podszewkę.	Każda chmura ma srebrną podszewkę		
One swallow doesn't make a summer.	Jedna jaskółka wiosny nie czyni.					
He that falls today may rise tomorrow.	Raz na wozie, raz pod wozem.	Kto dziś upadnie, jutro może powstać.	Kto dziś upada, jutro może powstać.	Kto dziś upada, może powstać jutro.	Kto dziś upadnie, jutro wstanie.	Kto pada dziś, może powstać jutro.
All that glitters is not gold.	Nie wszystko złoto, co się świeci.		Wszystko, co się świeci, nie jest złotem.	Wszystko, co się świeci, nie jest złotem		
A friend in need is a friend indeed.	Prawdziwych przyjaciół poznaje się w biedzie.		Przyjacieli w potrzebie jest naprawdę przyjacielem.	Przyjacieli w potrzebie jest przyjacielem		
A bird in the hand is worth two in the bush.	Lepszy wróbel w garści niż gołąb na dachu.	Ptaka w dłoni jest wart dwóch w buszu.	Ptaka w ręku jest wart dwóch w krzaku.	Ptaka w dłoni jest wart dwóch w buszu		
The apple doesn't fall far from the tree.	Niedaleko pada jabłko od jabłoni.		Jabłko nie spada daleko od drzewa.	Jabłko nie spada daleko od drzewa		
What youth is used to, age remembers.	Czym skorupka za młodu nasiąknie tym na starość trąci.	Do czego przywykła młodość, wiek pamięta.	To, do czego przyzwyczaiła się młodość, pamięta wiek.	Do czego przywykła młodzież, wiek pamięta	Co młody zwykł robić, starzec pamięta.	
April weather, rain and sunshine both together.	Kwiecień plecień bo przeplata, trochę zimy trochę lata.	Kwietniowa pogoda, deszcz i słońce razem.	Kwietniowa pogoda, deszcz i słońce razem.	Kwietniowa pogoda, deszcz i słońce razem		

Proverb	Dictionary equivalent	Google Translate	DeepL	PONS	ChatGPT 3.5	Google Bard
Do to others as you would have them do to you.	Nie czyn drugiemu, co tobie niemile.	Czyn innym tak, jak chciałbyś, aby oni czynili tobie.	Czyn innym tak, jak chciałbyś, żeby tobie czyniono.	Czyn innym tak, jak chciałbyś, żeby oni czynili tobie	Rób innym to, co sobie sam byś życzył.	
He that will not work shall not eat.	Bez pracy nie ma kołaczy.	Kto nie chce pracować, niech nie je.	Kto nie będzie pracował, nie będzie jadł.	Kto nie będzie pracował, nie będzie jadł.	Kto nie pracuje, ten nie je.	
As you make your bed, so you must lie on/in it.	Jak sobie pościesz, tak się wyśpisz.	Jak sobie ściesz łóżko, tak musisz na nim leżeć.		Jak ściesz swoje łóżko, więc musisz leżeć na nim / w nim		
One word is enough to a wise man.	Mądrzej głowie dość dwie słowie.	Jedno słowo wystarczy mądrymu człowiekowi.	Jedno słowo wystarczy mędrcom.	Jedno słowo wystarczy mędrcom		
Speech is silver, but silence is golden.	Mowa jest srebrem, a milczenie złotem.	Mowa jest srebrem, ale milczenie złotem.	Mowa jest srebrem, ale milczenie jest złotem.	Mowa jest srebrem, ale milczenie złotem	Mowa srebro, a milczenie złoto.	
The pitcher goes often to the well, but it is broken at last.	Dopóty dzban wodę nosi, dopóki mu się ucho nie urwie.	Dzban często idzie do studni, ale w końcu pęka.	Dzbanek często chodzi do studni, ale w końcu się psuje.	Dzban często idzie do studni, ale w końcu jest zepsuty	Dzban często chodzi do studni i w końcu się rozbić musi.	
At length the fox is brought to the furrier.	Nosił wilk raz kilka, ponieśli i wilka.	W końcu lis zostaje przyprawiony do kuśnierza.	W końcu lis trafia do kuśnierza.	Na długości lis jest doprowadzany do furiera	Kiedy lis trafia do krawca, traci futro.	
When in Rome, do as the Romans do.	Jak się wejdzie między wrony, trzeba krakać jak i one.		Kiedy jesteś w Rzymie, rób to, co robią Rzymianie.	Kiedy jesteś w Rzymie, rób to, co robią Rzymianie	W Rzymie, rób jak Rzymianie.	
Total	Semantic → multi-word expression → literal meaning	11	15	16	8	1

2. Too many errors

The following most frequent error was labelled after Popovic (2018:5) as “Too many errors”. This type of mistake occurred 6 times in Google Bard,

twice in PONS and DeepL, and once in Google Translate and Chat GPT. The case of this error is presented in Table 3.

Table 3

Too many errors EN-PL

Proverb	Dictionary equivalent	Google Translate	DeepL	PONS	ChatGPT 3.5	Google Bard
One swallow doesn't make a summer.	Jedna jaskółka wiosny nie czyni.		Jedna jaskółka nie czyni lata.	Jedna jaskółka nie czyni lata		Jeden orzeł nie czyni wiosny.
Don't look a gift horse in the mouth.	Darowanemu koniowi w zęby się nie zagłada.	Nie zagładać darowanemu koniowi w zęby.	Nie patrz darowanemu koniowi w zęby.	Nie zagładać darowanemu koniowi w usta		Nie zagładać w zęby koniowi podarunkowego.
A friend in need is a friend indeed.	Prawdziwych przyjaciół poznaje się w biedzie.					Prawdziwy przyjaciel poznaje się w biedzie.
The apple doesn't fall far from the tree.	Niedaleko pada jabłko od jabłoni.					Jak jabłko od jabłoni.
What youth is used to, age remembers.	Czym skorupka za młodu nasiąknie tym na starość trąci.					Co młodość zaszczepli, starość przypomni.
April weather, rain and sunshine both together.	Kwiecień plecień bo przeplata, trochę zimy trochę lata.				Kwiecień plecień, bo przeplata – trochę deszczu, trochę słońca, takie kwiecień się zdarza.	Kwiecień jest pleciony, bo przeplata: trochę zimy, trochę lata.
Total	Too many errors	1	2	2	1	6

The first example translated by DeepL, PONS “Jedna jaskółka nie czyni lata” and Google Bard, “Jeden orzeł nie czyni wiosny”, shows two types of errors:

- terminology – “lata” [summer] instead of “spring” [wiosna] and “orzeł” [eagle] instead of “jaskółka” [swallow]
- and phrase order – “nie czyni wiosny” instead of “wiosny nie czyni”.

The other errors by Google Translate, DeepL, PONS and Google Bard cited in Table 3 are similar to the one above. They concern incorrect terminology, missing words or their unnecessary addition, wrong structure, etc. Whereas an example of a translation by ChatGPT: “Kwiecień plecień, bo przeplata – trochę deszczu, trochę słońca, takie kwiecień się zdarza” indicates

- the wrong terminology: “trochę deszczu, trochę słońca” [a little rain, a little sun] instead of “trochę zimy trochę lata” [a little winter a little summer]
- the added phrase: “takie kwiecień się zdarza” [such April happens]
- and an inflection error in this unnecessarily added phrase – in the word “takie” instead of “taki” [such].

3. Disambiguation error

A further notable type of error, occurring only in AI programmes, is disambiguation. This error occurred once in ChatGPT and once in Google Bard:

- ChatGPT translated the proverb “One word is enough to a wise man” as “Mądry słucha jednego słowa i wie, o co chodzi” [The wise one listens to one word and knows what it is about].
- Google Bard rendered “Every cloud has a silver lining” into “Nawet wśród największych problemów można znaleźć coś pozytywnego” [Even among the biggest problems you can find something positive].

4. Phrase order

The other type of error was phrase order, occurring once in ChatGPT:

- “The apple doesn’t fall far from the tree” [Niedaleko pada jabłko od jabłoni] was translated into “Jabłko nie pada daleko od jabłoni”.

5. Terminology error

The last error, terminology, was recognised in the Google Bard translation of the saying “Do to others as you would have them do to you” [Nie czyń drugiemu, co tobie niemiłe]. Google Bard provided a translation in which the word “not” was missing: “Czyń drugiemu co Tobie niemiłe”.

Translation from Polish into English

1. Literary translation error

Table 4

Literary translation error PL-EN

Proverb	Equivalent	Google Translate	DeepL	PONS	ChatGPT 3.5	Google Bard
Nie ma tego złego, co by na dobre nie wyszło.	Every cloud has a silver lining.		There's no such thing as a good thing.	There is no bad thing that doesn't work out for the good.		
Raz na wozie, raz pod wozem.	He that falls today may rise tomorrow.	Once on the car once under the car.	Once on the wagon, once under the wagon.	Once on the wagon, once under the wagon.		
Nie wszystko złoto, co się świeci.	All that glitters is not gold.			Not all gold that glows.		
Darowanemu koniowi w zęby się nie zagląda.	Don't look a gift horse in the mouth.			Don't look in the teeth of a gift horse.		
Prawdziwych przyjaciół poznaje się w biedzie.	A friend in need is a friend indeed.		True friends are made in poverty.	True friends are known in poverty.		
Lepszy wróbel w garści niż gołąb na dachu.	A bird in the hand is worth two in the bush.	Better a sparrow in the hand than a pigeon on the roof.	Better a sparrow in the hand than a pigeon on the roof.	Better sparrow in hand than a pigeon on the roof.		
Niedaleko pada jabłko od jabłoni.	The apple doesn't fall far from the tree.			Nearby is falling an apple from an apple tree.		
Czym skorupka za młodu nasiąknie tym na starość trąci.	What youth is used to, age remembers.	What the shell absorbs in youth, it smacks of in old age.	What a shell soaks in its youth trumps in its old age.	What the shell will soak in its youth, it will soak in its old age.		
Kwiecień plecień bo przeplata, trochę zimy trochę lata.	April weather, rain and sunshine both together.	April is plaited because it intertwines, a bit of winter, a bit of summer.	April is in full swing, a little winter a little summer.	April weave because weave, a little winter a little summer.		
Nie czyń drugiemu, co tobie niemiłe.	Do to others as you would have them do to you.	Do not do to others what you unpleasant.	Do not do unto others as you would have them do unto you.	Do not do to another what is displeasing to you.	Do not do unto others what you would not have them do unto you.	

Proverb	Equivalent	Google Translate	DeepL	PONS	ChatGPT 3.5	Google Bard
Bez pracy nie ma kołaczy.	He that will not work, shall not eat.			Without work, there are no stakes.		
Jak sobie pościesz, tak się wyśpisz.	As you make your bed, so you must lie on/in it.	As you make your bed, so shall you sleep.	As you make your bed, so shall you sleep.	If you make your bed, you'll sleep.		
Mądrzej głowie dość dwie słowie.	One word is enough to a wise man.	Two words are enough for a wise head.	Two words are enough for a wise head.	Two words are enough for a wise head.		A word to the wise is enough
Mowa jest srebrem, a milczenie złotem.	Speech is silver, but silence is golden.	Speech is silver and silence is golden.	Speech is silver and silence is gold.	Speech is silver, and silence is gold.		
Dopóty dzban wodę nosi, dopóki mu się ucho nie urwie.	The pitcher goes often to the well, but it is broken at last.	As long as the jug carries water, until its handle breaks off.	A jug carries water until its ear is broken.	The pitcher carries water until its ear is torn off.		
Nosił wilk razy kilka, ponieśli i wilka.	At length the fox is brought to the furrier.	He carried the wolf several times, they carried the wolf too.	The wolf has borne the wolf, and the wolf has carried the wolf.	He carried the wolf several times, they carried and the wolf.		
Jak się wej-dzie między wrony, trzeba krakać jak i one.	When in Rome, do as the Romans do.	When you go among the crows, you have to croak like them.	When you are among the crows, you must caw like the crows.	When you get among the crows, you have to crack like them.		
Total	Semantic → multi-word expression → literal meaning	11	13	17	1	1

The error of literal translation of figurative language was also the most common mistake in translating MT from Polish into English, as depicted in Table 4. This error was identified 17 times in PONS, 13 times in DeepL, 11 times in Google Translate, and only once in ChatGPT and Google Bard each.

2. Synonym error

Synonymisation ranks second in terms of the frequency of errors produced in the EN → PL translation process, yet to a much lesser extent than

a literal translation (see Table). Proverbs were translated into synonyms (As the twig is bent, so grows the tree) or synonymical expressions (Fortune is fickle) three times by ChatGPT and Google Bard each, twice by Google Translate and once by DeepL. It is essential to note that this type of error should not necessarily be treated as a mistake as long as it preserves the intention of a proverb from a source text.

Table 5

Synonym error PL-EN

Proverb	Equivalent	Google Translate	DeepL	PONS	ChatGPT 3.5	Google Bard
Raz na wozie, raz pod wozem.	He that falls today may rise tomorrow.				Fortune is fickle.	
Niedaleko pada jabłko od jabłoni.	The apple doesn't fall far from the tree.	Like father, like son.				
Czym skorupka za młodu nasiąknie tym na starość trąci.	What youth is used to, age remembers.					As the twig is bent, so grows the tree.
Bez pracy nie ma kołaczy.	He that will not work shall not eat.	No pain, no gain.	No work, no pay.		No pain, no gain.	No pain, no gain.
Jak sobie pościelesz, tak się wyśpisz.	As you make your bed, so you must lie on/in it.				You made your bed, now lie in it.	You reap what you sow.
Total	Semantic → multi-word expression → synonym	2	1	0	3	3

3. Wrong synonym error

The further error that occurred in the research was a wrong synonym, which happened twice in Google Bard:

- “Nosił wilk razy kilka, ponieśli i wilka” [At length the fox is brought to the furrier] into “A fool and his money are soon parted”.
- “Jak się wejdzie między wrony, trzeba krakać jak i one” [“When in Rome, do as the Romans do”] into “If you lie down with dogs, you’ll get fleas”.

and twice in ChatGPT

- “Dopóty dzban wodę nosi, dopóki mu się ucho nie urwie” [The pitcher goes often to the well, but it is broken at last] into “You can’t make an omelette without breaking eggs”.
- “Nosił wilk razy kilka, ponieśli i wilka” [At length the fox is brought to the furrier] into “You live and learn”.

The above examples were classified as erroneous synonyms due to the discrepancy in meaning between the proverb in the target text and its translation.

4. Disambiguation error

Another error is disambiguation, which already occurred earlier in the English-to-Polish translation. In this case, it is also an error typical for ChatGPT, where it occurred once:

- “Mądrej głowie dość dwie słowie.” [One word is enough to a wise man] into “Wise head has a closed mouth”,

and Google Bard, where it occurred three times:

- “Raz na wozie, raz pod wozem” [He that falls today may rise tomorrow] into “Life is full of ups and downs”.
- “Kwiecień plecień bo przeplata, trochę zimy trochę lata” [April weather, rain and sunshine both together] into “April is a fickle month, with some winter and some summer”.
- “Nie czyń drugiemu, co tobie niemiłe” [Do to others as you would have them do to you] into “Treat others the way you want to be treated”.

5. Terminology error

Terminology error was found in the translation of one proverb: “Jedna jaskółka wiosny nie czyni” [One swallow doesn’t make a summer] by “standard MT” tools. All three tools, Google Translate, DeepL and PONS changed the word “summer” into “spring” as in the Polish version of the proverb.

6. Phrase order error

There was a single example of phrase order error which was recognised in the DeepL translation of the proverb “Nie wszystko złoto, co się świeci”. It was “**Not** all that glitters is gold” instead of “All that glitters is **not** gold”.

7. Too many errors

The last category that was classified in PL → EN translation was too many errors, which occurred only once in Google Bard:

- “Dopóty dzban wodę nosi, dopóki mu się ucho nie urwie” [The pitcher goes often to the well, but it is broken at last] into “A pitcher will go until it breaks”.

The above MT contains tense and terminology mistakes.

Conclusion

In the evaluation of machine translation (MT) tools for the translation of proverbs from English to Polish (EN-PL) and vice versa (PL-EN), the study uncovered notable insights into the strengths and limitations of various language models.

In translation from English into Polish, the predominant error observed across MT tools was the literal translation of figurative language, occurring most frequently in PONS, DeepL, and Google Translate. Notably, this error was recognised mostly in “standard MT” tools, highlighting the challenge of handling idiomatic expressions. The occurrence of “Too Many Errors” pointed to challenges in processing complex phrases. These MT-specific errors, including terminology issues and structural inaccuracies, may stem from intricate data processing or self-learning errors within these language models. Another error unique to AI programs was disambiguation, highlighting instances where the machine failed to provide an equivalent but still demonstrated a higher level of semantic understanding of the intended meaning. These errors were observed in both ChatGPT and Google Bard, emphasizing the nuanced nature of proverbial language. Isolated instances of phrase order and terminology errors were identified, further underscoring the complexity of translating proverbs, especially by AI tools.

Similar to EN-PL, in Polish to English MT, literal translation errors were the most common. Notably, this error occurred more frequently in PONS, DeepL, and Google Translate, emphasizing the challenge of faithfully rendering figurative language. Synonym errors, though less frequent than literal errors, were identified in ChatGPT and Google Bard. Additionally, wrong synonym errors in Google Bard and ChatGPT highlighted discrepancies in meaning between the source text and translations. Disambiguation errors persisted in ChatGPT and Google Bard, indicating challenges in accurately interpreting the intended meaning of proverbs during translation. The single occurrence of too many errors in Google Bard may also indicate some challenges in reflecting the intricacies of handling proverbial expressions.

It can also be observed that translation into English yielded significantly better results than translation from English into Polish. The research focuses on Polish proverbs. Therefore, the outcomes could have varied if English proverbs were the main point instead. The English counterparts might have been less prominent and, consequently, not recognised by the programmes. This dilemma underscores a challenge in machine translation, whereby disparate languages may assign distinct degrees of popularity to particular proverbs, leading to variations in their cross-linguistic equivalents. This fact confirms that less popular languages are being marginalised in the lens of technological developments. Nevertheless, the results suggest that machine translation technology has made significant progress in recent years, with some tools demonstrating the ability to provide accurate translations of idiomatic expressions such as proverbs. However, further improvements are needed to address issues such as literal translations and terminology accuracy.

Discussion

The results of the present study, and specifically the analysis and categorisation of the errors occurring in MT, confirm the findings of Alkhresheh & Almaaytah (2018), who note that wrong target language equivalent, literal translation, wrong word order, inappropriate lexical words, and grammatical mistakes occur in figurative language translations. Meanwhile, Bouhadiba (2016) indicates the above errors may occur due to the lack of cultural context of proverbs. Consequently, the outcome is stylistically ambiguous and culturally inappropriate. Bouhadiba (2016) refers to such a state of affairs as “awkwardness and ungrammaticality”. The answer to the problem of automatic translation of figurative language may lie, as Alkhresheh & Almaaytah (2018) further point out, in providing a suitable corpus of data to MT and AI systems to achieve higher-quality translation of proverbs. Spencer (2018), who compared the translations of common phrases by Google Translate and a specialised programme built on an algorithm that translates proverbs, made a similar assumption. His results indicate that automatic translation programs are able to translate, depending on the algorithms used, figurative language (TransVerb) or literal language (Google Translate), but are unable to combine both skills and implement them together. In contrast, the present study shows that contemporary systems operating on the basis of artificial intelligence have more or less taken a step towards translating figurative language. Moreover, ChatGPT and

Google Bard applied the technique suggested by Al-khresheh & Almaaytah (2018) of providing an explanation of a proverb whose equivalent the software in question was unable to deliver.

All the above considerations highlight the need for additional research to determine the effectiveness of machine translation tools in handling figurative language in context. The purpose of translation automation is neither to replace dictionaries nor to rely solely on literal language, devoid of the element of cultural differences, and since, as Mieder (2004) notes, proverbs are used in a variety of fields such as politics, sociology, mass culture, advertising and journalism, they should be included in further research to improve machine translation. Automatic translation of quotations containing proverbs, including their original context, is a viable method to achieve this further research goal.

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