| **RESEARCH ARTICLE**

DeepSeek, Google Translate and Copilot's Translation of Arabic Grammatical Terms Used Metaphorically

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| **ABSTRACT**

Arabic has unique linguistic phenomena, one of which is that some Arabic grammatical terms (AGTs) are used as fixed expressions and metaphors in daily speech, with no such phenomenon in English**.** A sample of 52 AGTs that are used as metaphors and fixed expressions in Standard and Colloquial Arabic was collected and translated by three AI tools: DeepSeek (DS), Google Translate (GT) and Microsoft Copilot (MC). The sample contains conjoined prepositions, particles, pronouns, verb to be, and others. Data analysis showed that the highest correct translations were rendered by MC (43%), followed by DS (29%), and the least by GT (23.5%). DS, GT and MC gave identical (correct and incorrect) translations to 57% of the terms. They tended to translate word for word, which sometimes resulted in weird and funny equivalents as in بين بين *between between*, لعل وعسى *perhaps and perhaps*. Examples of terms translated correctly by MC only are الحكاية فيها ان *there is something fishy*, من إلى from A to Z; يفعل فاعل *by an unknown person*, حاشا وكلا *absolutely not*. An example of a term correctly translated by DS is بين بين *in between*. Examples of terms with identical translations by the three AI tools are كائنا من كان *whoever it may be*, داعش واخواتها *ISIS and its sisters,* الدول العربية مفعول به *the Arab countries are the object.* In الأردن المبتدأ ونحن الخبر *Jordan is the subject, we are the predicate*, المبتدأ & الخبر were mistranslated as they are polysemous, المبتدأ means *subject* and *starting point*, and الخبر means *predicate* and *news*. Specifically, the three AI tools have difficulties with polysemous AGTs and those with a cultural content as those used in titles of TV shows, those requiring a historical background (فيها ان) and those used as slogans. The percentage of correct translations rendered by AI herein is the lowest compared to medical and Gaza-Israel War terminology, zero-expressions and educational polysemes. Reasons for AI mistranslations, recommendations for raising students' awareness of the weaknesses that AI has in translating AGT metaphors and suggestions for improvements are given.

1. Introduction

Arabic has many types of metaphorical and fixed expressions such as zero expressions (Al-Jarf, 2025c), numeral-based formulaic expressions (Al-Jarf, 2023b), ibn (son) and bint (daughter) *(*Al-Jarf, 2023a), dar (house) and bayt (home) (Al-Jarf, 2022a), time metaphors (Al-Jarf, 2023c), color (Al-Jarf, 2019), om- and abu- (Al-Jarf, 2017a), binomials (Al-Jarf, 2016b), body parts, food, money, animal, life and death, water, pen and paper, and many others. In addition, a unique linguistic phenomenon in Arabic is the use of Arabic grammatical terms (AGTs) as fixed expressions with a metaphorical meaning used in Standard as well as Colloquial Arabic, with no such phenomenon in English. In translation, Arabic and English metaphors and fixed expressions pose numerous problems for professional and student translators due to their context-dependent usage, non-literal and cultural-bound meanings. Similarly, they pose many translation challenges to machine translation (MT), artificial intelligence (AI), AI tools, assistants and chatbots.

A review of the literature showed that the translation of metaphors by AI has received a lot of attention in the literature. Numerous studies investigated issues related to AI and metaphors as approaches to metaphor processing by AI (Veale, Shutova, & Klebanov, 2016); the key technologies of metaphor translation, and the difficulties and methods of metaphor translation by AI (Wang, & Chai, 2024); challenge that AI has in metaphorical language interpretation (Skrynnikova, 2024); why metaphor and AI matter to each other (Barnden, 2008); limitations in MT translation of metaphorical expressions (Matyakubova, 2024); a comparison of the translation of metaphorical language in Oscar Wilde's "The Picture of Dorian Gray's" from English to Spanish by GT and human translators (Zajdel, 2022); a corpus-based analysis of conceptual metaphor expressions within the European Union's Artificial Intelligence Act in terms of their type, orientation, and underlying rationale (Ye, & Li, 2024); human evaluation metrics focusing on the translation of figurative language by MT with a multilingual parallel metaphor corpus generated by post-editing (Wang, Zhang, Wu, Loakman, Huang, & Lin, 2024); the translation strategies and lexical features of metaphorical terms in German AI discourse (Siyu, 2025); literary metaphor in the context of generative AI and the use of trained an Long Short-Term-Memory-based language model in Afrikaans for improving textual quality (van Heerden, & Bas, 2024); cultural perspectives on MT translation of political text metaphors using AI algorithms according to actual translation needs (He & Jiang, 2024); how novel literary metaphors drawn from Serbian poetry are interpreted in English by GPT-4 and human translators (Ichien, Stamenković, & Holyoak, 2024); and a multilingual corpus-based study to evaluate the accuracy, semantic fidelity, contextual appropriateness and cultural sensitivity of AI-generated idiom translations across English, Urdu, Sindhi, and other selected languages (Mughal, Seemab, Zaigham, Bhatti, & Khan, 2024).

Another line of research investigated AI translation of proverbs, idioms and metaphors from Arabic to English and English to Arabic and the translation strategies used as in the following studies: Comparison of ChatGPT and human translators in translating twenty proverbs from English to Arabic and the most frequent errors produced by ChatGPT (El-Saadany, 2024); comparison of Arabic and English proverb translation for intercultural interaction by a topic modelling algorithm (Hamdi, Hashem, Holbah, Azi & Mohammed, 2023); comparison of the translation accuracy of English and Arabic proverbs by Reverso, Systran, Yandex, Bing and Google Translate to find out which MT can provide a more communicative, semantic and literal target equivalents (Jibreel, 2023); the translation strategies used by AI models and human translators in translating euphemistic expressions from Arabic to English (Al-Wasy, & Mohammed, 2024); assessment of the quality of AI vs. human Arabic-English translations of hidden proverbs in the Holy Qur'ān (Fakhrabadi, & Sharifabad, 2023); the contextual and semantic difficulties that AI has in translating idiomatic expressions (Almaaytah, 2022); comparison of Gemini, ChatGPT, and Google Translate in rendering English idioms into Arabic (Obeidat, Haider, Tair & Sahari, 2024); comparison and evaluation of Google, Microsoft Bing, and Systran's translation of idiomatic expressions in online newspapers from English to Arabic (Musaad, & Al Towity, 2023); Arabic idiom detection by Deep Learning (CNN, LSTM, Bi-LSTM, and GRU) and Transformer-based models (BERT, RoBERTa, and DistilBERT) (Himdi, 2024); problems of translating English food idioms to Arabic by ChatGPT, whether food idioms are preserved in the Arabic translation by ChatGPT and whether Newmark's communicative and semantic translation theory was applied (Hamoud, 2024); the impact of prompt formulation in AI Chatbots on the quality of the translation of Arabic idioms to English and vice versa, strategies of idiom translation in both directions, educational software for idiom translation, and the role of AI and chatbots in this process (Hakami, & Abomoati, 2024); a conceptual approach to natural language processing of Arabic metaphors (Alkhatib, & Shaalan, 2017); and the challenges facing Natural Language Processing of Arabic metaphors by neural MT systems (Alkhatib, & Shaalan, 2018).

Few more studies, by the author, focused on the challenges that AI has in translating zero expressions by MC and GT (Al-Jarf, 2025c); the Gaza-Israel war terminology by GT & MC (Al-Jarf, 2025b); translation of educational polysemes in full-text Arabic research papers by GT (Al-Jarf, 2025a); translation of medical terms by GT & MC (Al-Jarf, 2024c); and English-Arabic translation of technical terms by GT (Al-Jarf, 2021; Al-Jarf, 2016a).

The literature review showed a lack of studies that explore the use of AI in translating Arabic grammatical terms (AGT) used metaphorically. Therefore, this study aims to explore how AI, namely DeepSeek (DS), Microsoft Copilot (MC) and Google Translate (GT) translates Arabic grammatical terms (AGTs) used metaphorically to English; to evaluate the accuracy of translation equivalents; to find out the percentage of AGTs that are correctly translated by DS, MC & GT, by DS only, by MC only and by GT only; the translation strategies used by DS, MC and GT, and the kinds of difficulties that DS, MC & GT have in translating AGTs.

This study is significant for professional translators, translation students and instructors who use AI in translating metaphorical and idiomatic expressions, in general, and AGTs used metaphorically, in particular, from Arabic to English, as it shows the challenges and weaknesses that AI has in translating them. It will also provide feedback and insights on translation inaccuracies that are valuable for making meaningful improvements in the three AI systems. Moreover, it highlights the importance of human judgment in conveying underlying meaning, and nuance that DS, MC and GT still struggle with. It fosters a mindset of critical thinking and caution. Student, as well as professional translators, will benefit greatly from understanding the limitations of AI translation. Thus, translators will be empowered to approach translation with a critical eye. The inaccuracies revealed by this study will develop the translation skills needed to adapt and refine translations generated by DS, MC and GT.

In addition, this study is part of a series of studies by the author that focus on the translation of metaphorical expressions, polysemes, specialized terminology and texts from English to Arabic and Arabic to English using AI such as the translation of zero expressions by MC and GT (Al-Jarf, 2025c); translation of educational polysemes in full-text Arabic research articles by GT (Al-Jarf, 2025a); translation of the Gaza-Israel war terminology by MC and GT (Al-Jarf, 2025b); translation of medical terms by MC and GT (Al-Jarf, 2024c); and English-Arabic translation of technical terms by GT (Al-Jarf, 2021; Al-Jarf, 2016a).

2. Definition of Terms
2.1 DeepSeek
DeepSeek[1] (DS) is a Chinese AI research company that was founded in 2023 and has since released several AI models, including DeepSeek-V3 and R1, which are available for users for free. DS provides open-source AI models that operate using advanced neural networks and machine learning algorithms to power its language processing capabilities. These algorithms allow DS AI to adapt, process, and generate text with high accuracy and efficiency. Its neural systems are designed to enhance text understanding, generation, and real-time AI processing, making DeepSeek AI a scalable and high-performance alternative for businesses and developers.

2.2 Microsoft Copilot (GitHub Copilot)
Microsoft Copilot[2] is a chatbot developed on the basis of a large language model. It is an AI-powered code completion tool that uses the Microsoft Prometheus model, built upon OpenAI's GPT-4 foundational large language model to generate code snippets based on the context of the code being written. Copilot uses machine learning algorithms to translate text. Its interactive interface style is similar to that of ChatGPT. It was first launched as Bing Chat on February 7, 2023, a built-in feature for Microsoft Edge and Microsoft Bing. It is Microsoft's primary replacement for the discontinued Cortana, which in turn has been fine-tuned using both supervised and reinforcement learning techniques.

2.3 Google Translate
Google Translate[3] (GT) is a free web-based translation service that was developed and launched by Google in 2006. It is a machine translation tool that uses artificial intelligence to translate text from one language to another. It translates a variety of texts and media such as words, phrases, and webpages. Originally, GT was released as a statistical machine translation service. The input text had to be translated into English first before it was translated into the selected language. GT had poor grammatical accuracy because statistical machine translation uses predictive algorithms to translate text. In November 2016, Google adopted multilingual machine translation models which use deep learning techniques to translate whole sentences at a time, which proved to be more accurate in translations between English and German, French, Spanish, and Chinese. This approach enables zero-shot translation, meaning Google Translate can translate between language pairs it has never explicitly learned Although, DS MC and GT use deep learning techniques, however, GT is not as interactive as MC.

2.4 Arabic Grammatical Terms
Arabic grammar has a rich set of terms that define different linguistic structures. Here are some key Arabic grammatical terms that are used in the sample of AGTs and their definitions:

- اسم (Ism) – Noun: A word that refers to a person, place, thing, or idea.
- فعل (Fi'l) – Verb: A word that expresses an action or state.
- حرف (Harf) – Particle: A word that connects or modifies other words but does not have meaning as an independent word.
- مبتدأ (Mubtada') – Subject of a nominal sentence, i.e., the noun that begins a sentence and is usually followed by a predicate.
- خبر (Khabar) – Predicate: The part of the sentence that provides information about the subject.
- كان وأخواتها (Kāna wa Akhawātuhā) – "Kana and its Sisters" are verbs that modify nominal sentences by introducing a tense and affecting the predicate (خبر). These verbs typically take a subject (مبتدأ) in the nominative case and a predicate (خبر) in the accusative case.
- إن وأخواتها (Inna wa Akhawātuhā) – "Inna and its Sisters" are particles that emphasize or modify nominal sentences. They include إنّ (indeed), أنّ (that), لكنّ (but), كأنّ (as if), and ليت (I wish). These particles change the subject (مبتدأ) to the accusative case while keeping the predicate (خبر) in the nominative case
- فاعل (Fa'il) – Subject of a verb, i.e., the doer of the action in a sentence.
- مفعول به (Maf'ul Bihi) – Object is a noun that receives the action of the verb.

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[1] DeepSeek AI
[2] https://en.wikipedia.org/wiki/Microsoft_Copilot
[3] https://en.wikipedia.org/wiki/Google_Translate

- الضمائر (Al-Ḍamāʾir) – Pronouns are words that replace nouns. Arabic pronouns are categorized into attached, detached, nominative and accusative, relative pronouns such as أنا (I), هو (he), هم (they), and نحن (we) an others.
- أسماء الإشارة (Asmāʾ al-Ishārah) – Demonstrative Pronouns are words that point to specific objects or people as هذا (this – masculine), هذه (this – feminine), ذلك (that – masculine), and تلك (that – feminine).
- حروف الجر (Huruf al-Jarr) – Prepositions are words that indicate relationships between nouns, such as "في" (in) or "على" (on).
- جار ومجرور (Jār wa Majrūr) – Prepositional Phrase consisting of a preposition (حرف جر) and a noun it governs (الاسم المجرور).
- مضاف إليه (Mudaf Ilayh) Appositive which refers to the noun that follows another noun (called المضاف or "Mudaf") in a possessive/genitive or descriptive relationship.
- إضافة (Idafa) – Genitive Construction: A grammatical structure that links two nouns, where the second noun modifies the first.
  (Al-Jarf, 2015; Al-Jarf, 1994).

3. Data Collection and Analysis

A sample of 52 AGTs that are used as metaphors and fixed expressions in Standard and Colloquial Arabic was collected. The sample contains conjoined prepositions, particles, pronouns, verbs to be, and others. All AGTs in this study were coined by Arabic speakers. They can be spontaneously coined by anybody, even by children as in (أنا ممنوع من الصرف) which was created by a child. Each AGT was translated by DeepSeek (DS), Google Translate (GT) and Microsoft Copilot (MC) in isolation, i.e., no context was provided especially that GT is not interactive. The percentage of correct translation equivalents given by DS, MC & GT, by MC only and by GT only, was calculated. The strategies that DS, MC and GT used in translating each AGT were classified into literal translation, conceptual translation, or modulation, use of identical equivalents, and use of synonyms. The difficulties that DS, MC & GT have in translating AGTs were classified into difficulties with polysemes, AGTs with repeated preposition, particles and conjunctions and those with culture-bound meanings.

Results of the analysis of the MC and GT's translation error data are reported quantitatively and qualitatively.

To check for the reliability and validity of the data analysis, a colleague specialized in translation classified a sample of errors. She went through the list of AGT in the sample and their equivalents and made judgments regarding the accuracy and classification of the translation errors. Classifications by the author and her colleague were compared. There was a 98% agreement between the raters. Disagreements were solved by discussion.

4. Results

4.1 Percentage of Correct Equivalents by MC, DS and GT

Data analysis showed that the three AI tools gave identical correct equivalents to 23.5% of the AGTs in the sample. MC gave correct translations to 43% of the AGTs, compared to 29% by DS and 23.5% by GT. This means that MC gave the most, and GT gave the least correct equivalents. It was also found that DS, GT and MC gave identical equivalents (correct and incorrect) equivalents to 57% of the AGTs in the samples. Examples of AGT that were correctly translated by all three AI tools whether with identical wording or slightly different wording are: انت وانا > *you and I,* لیته > *If only,* لا أنا ولا أنت > *neither me nor you,* اما انا او انت > *either me, or you,* منا ومنكم > *from us and from you,* (تقبل الله) > *never ever > neither nor,* لا ولا > *never ever > neither nor,* بین هذا وذاك > *in between > between this and that,* هنا وهناك > *here and there,* كائنا من كان > *whoever it may be;* یا من امره بین الكاف والنون > *"O You whose command is between the letter 'Kaf' and 'Nun.'"* It is noted that the AGTs that were correctly translated are conjoined demonstratives and conjoined prepositions, whether negative or affirmative. یا من امره بین الكاف والنون was correctly translated probably because it is a widely-used Islamic expression which might be available in the AI corpus.

Interestingly, only MC gave correct translations to the following AGTs: حاشا وكلا *absolutely not;* شخص نكرة *"an unknown person" or "an indefinite person";* بفعل فاعل *by an unknown person;* برنامج ضمیر المتكلم *first-person pronoun program","speaker's conscience program", "the first-person perspective program",* من إلى *from a to z from a to z;* هلّك وقّني = هلّك وقّني = اصبح/راح في خبر كان *has become a thing of the past;* مسلسل اللام الشمسیة *The Solar Lam Series";* هل وهل *Question after question;* لعل وعسى *hopefully;* الحكایة فیها ان *there is something fishy.*

Additionally, DS gave correct equivalents to the following AGTs: بین بین > *so-so, in between* اصبح/راح في خبر كان > *it became/went into the realm of the past;* لعل وعسى > *perhaps and hopefully.*

4.2 Types of Faulty Translations

DS, GT and MC gave many faulty equivalents as in the following examples:

- وكان ما كان > *and what was, was (DS & GT); and it was what it was (MC),* instead of (there we go, this is what happened)

- انا ممنوع من الصرف >*I am prohibited from exchanging (currency) (DS); I am banned from spending (MC); I am prohibited from being inflected (GT),* instead of (I cannot be dismissed).
- ما محل هذه من الاعراب >*What is the grammatical position of this? (DS); What is the syntactic position of this? (MC); What is the grammatical position of this in the parsing? (GT),* instead of (it does not make sense)
- مثل الجار والمجرور >*Like the preposition and its object (DS); Like the preposition and the noun (MC); like a prepositional phrase (GT),* instead of (they are inseparable like a preposition and its object or he/she follows something/somebody blindly).

4.2.1 Faulty Identical Translations
DS, GT and MC gave identical faulty equivalents as in the following examples:

- الأردن المبتدأ ونحن الخبر > *Jordan is the subject, we are the predicate,* instead of (Jordan is the starting point and we - as a channel - report the news).
- انت منا وعلينا > *You are from us and upon us & You are from us and among us,* instead *of (you are family or you are part of us).*
- داعش واخواتها *ISIS and its sisters,* instead of (ISIS and the like; ISIS and its counterparts or ISIS and similar extremist groups).
- الدول العربية مفعول به >*The Arab countries are the object,* instead of (have no say in anything; Arab countries are at the receiving end; implies passivity or being acted upon, especially in a political or economic context).
- كان فعل ماضي > *Was is a past tense verb, instead of* (this was in the past but it is not the status quo anymore).
- كم وكم > *How much and how much,* instead of (many a times or so many times/alot).
- كنا فين وصرنا فين >*where I was and where I am now),* instead of (where we started and where we are now).
- لا محل له من الاعراب > *It has no place in grammatical parsing (DS); It has no place in grammar (MC); no position in syntax (GT),* instead of (does not fit anywhere / has no meaning).
- ليلى أصبحت مضاف اليه في أي حاجة > *Layla has become an addition in anything,* instead of (she imposes herself on everything or Layla is thrown into everything, whether relevant or not).
- كنا وكانوا > *We were and they were,* instead of (this was the status quo in the past but not anymore).
- بين بين >*between between,* instead of (so so).
- و و > *and and,* instead of (so on and so forth).
- سقط بينَ بينَ > *"fell between between,"* instead of (between life and death).
- من وين لوين > *From where to where*, which actually means (whom/what do you think you are in Levantine Arabic).
- الفاعل والمفعول > *The subject and the object,* instead of (active vs. passive roles in a situation).

4.2.2 Faulty Synonymous Equivalents
DS, GT and MC gave faulty synonymous equivalents as in the examples in Table 1.

Table 1: Examples of Synonymous Equivalents Given by DS, GT and MC

AGTs	DS	GT	MC	Implied Meaning
انا ممنوع من الصرف	I am prohibited from exchanging (currency).	I am banned from spending	I am prohibited from being inflected	Cannot be dismissed
تاء التأنيث	The feminine marker (in Arabic grammar)	The feminine taa	The feminine suffix	Women
كم وكم	How much and how much	How much and how much	How many and how many	Many a times
لا له ولا عليه	Neither for him nor against him	Neither for him nor upon him	Neither for nor against	he does not owe anything to anybody and nobody owes him anything
ما محل هذه من الاعراب	What is the grammatical position of this in the parsing?	What is the syntactic position of this?	What is the grammatical position of this?".	does not fit anywhere / has no meaning
مثل الجار والمجرور	Like the preposition and its object.	Like the preposition and the noun	like a prepositional phrase	The leader and the follower
منا وفينا	From us and within us	From us and in us	From us and among us	You are family

الصحيح والمعتل	The sound and the weak	The sound and the defective	The sound and the weak	The capable and incapable
منك وفيك	From you and within you	From you and in you	From you and within you	Originates from you
منه وفيه	From him and within him	From him and in it	From him and within him	It is inherent in him
لا لي ولا علي	Not for me, nor against me	Neither for me nor against me	Neither for me nor upon me	I do not owe anything to anybody and nobody owes me anything
نون النسوة	The feminine plural marker (in Arabic grammar)	The feminine nun	The feminine suffix	women
نون النضال	The "noon" of struggle	The feminine nun of struggle	The struggle's suffix	Women heroes

4.2.3 *Word-for-word Translation*

The error data analysis showed that MC, DS & GT tended to translate word for word rather than providing a conceptual translation or modulation, which sometimes resulted in meaningless and funny translations as in the following:

- شخص نكرة > an indefinite person (DS & GT), instead of an unknown person.
- بين بين *between between,* instead of (so so or half and half).
- لعل وعسى *perhaps* and *perhaps,* instead of (hopefully; maybe).
- الأردن المبتدأ ونحن الخبر *Jordan is the subject, we are the predicate*, الخبر was mistranslated as it is polysemous meaning *predicate* and *news* which actually means (Jordan is the starting point and we report the news).
- هل وهل وهل > *Did, did, and did (DS); Is and is and is (GT),* which actually means (Didn't I do this and that).
- تاء التأنيث > *The feminine marker,* instead of "women".
- برنامج ضمير المتكلم > *first-person pronoun*, which actually a metaphor for expressing personal opinion, it allows the host and guests to present their views as if they were speaking in the "I" form.
- نون النسوة > *The feminine plural marker*, instead of saying (women).
- نون النضال > *The "noon" of struggle (DS); The feminine nun of struggle (GT); The struggle's suffix (MC).* It actually refers to women activists or heroes who advocate, fight for or defend something.

4.2.4 *AI Problems with Polysemes*

Polysemes are words or phrases that have two or more meanings. For example, the word "*bank*" can mean (a financial institution and riverbank); and *break the ice* (literally breaking ice vs. initiating conversation).

In AGTs in this study, polysemy results from either polysemous words within some AGTs or multiple meanings of the whole AGT as a phrase. In this study, DS, GT and MC failed to capture the underlying meaning of many AGTs in the sample. AGTs used as metaphors herein show how Arabic grammar has a fascinating way of crossing into daily conversation and metaphors. For example, الأردن المبتدأ ونحن الخبر was literally translated to *Jordan is the subject, we are the predicate*. The phrase is the slogan of Kingdom TV in Jordan. The slogan contains polysemous words that are metaphorically used. الخبر & المبتدأ are polysemous words used jointly in Arabic grammar. In the slogan, (المبتدأ) means the "starting point", & الخبر the "news". The slogan suggests that Jordan is the central focus, while the channel serves as the source of news and analysis. It reinforces the idea that Kingdom TV is dedicated to Jordanian affairs, presenting the country's events, developments, and perspectives. It also means Jordan is the focal point and the central axis, where all news and information originate from and the TV station serves as a conduit for delivering news and insights to the audience, acting as a bridge that connects Jordan (the starting point) and the viewers through the delivery of news, as in the relationship between the subject and the predicate in a sentence.

A second example is برنامج ضمير المتكلم which was literally translated as the *first-person pronoun*. This AGT was used metaphorically as a TV show's title. The show explores personal narratives, identity, and self-expression. ضمير is polysemous with 2 meanings: In grammar, ضمير المتكلم refers to "I" or "we", indicating direct involvement. The other meaning is *conscience*. The show metaphorically suggests that it amplifies voices that speak from personal experience and that the show centers on individual stories, allowing speakers to express their truths and perspectives. By using "ضمير المتكلم", the program highlights self-representation, encouraging people to take ownership of their narratives rather than being spoken for.

A third example is ممنوع من الصرف which is used in Arabic grammar to refer to a group of proper nouns, adjectives and certain plural forms that cannot be inflected according to the normal grammatical declension rules. الصرف is polysemous with several meanings: in grammar it refers to declension or inflection. It is also related to the verb انصرف which means "go away". The phrase was used by a boy named رضوان *Radwan* when his grandfather told him انصرف (go away). In a playful manner he replied " أنا ممنوع من الصرف (I am not declinable/ inflectionable, i.e., I cannot be dismissed), as his name is one of the diptote nouns. Here he related his name to declension rules which do not allow رضوان to be declined as other nouns, but his reply implied that he will not "not go away" (connecting the verb انصرف with الصرف ممنوع من). The boy cleverly responded with " أنا ممنوع من الصرف", implying that he refuses to leave—just like diptote nouns refuse grammatical changes. It shows that he is stubborn and unyielding, humorously likening himself to a noun that does not accept kasra or tanween. This witty reply showcases linguistic creativity and how grammar can be used as a tool for playful everyday speech.

الصحيح والمعتل was translated to *the sound and the weak*. Both words are polysemous. As a metaphor, the phrase is used to describe people or things based on their strength and stability or their weakness and susceptibility. They can also be used to refer to *the capable and incapable*, or the *fit and the unfit*.

لا محل له من الاعراب in Arabic grammar means that a word or a sentence has no effect and needs no parsing. Metaphorically, it means that something has no value or significance in a specific context. Similarly, ما محل هذا من الاعراب asks about the significance or value of something in a specific context.

مثل الجار والمجرور is polysemous as it has two meanings as a grammatical term (prepositional phrase) and as a metaphor referring to a person or a thing that is fully dependent on another, i.e., as a follower and a leader.

شخص نكرة was translated by DS and GT as a grammatical terms (indefinite person). نكرة is polysemous, having a grammatical meaning (indefinite noun) and a common, lexical meaning (unknown person; a person who lacks recognition or influence; someone who does not stand out in society or a particular field; or a person who has no notable achievements or impact) depending on the context.

Although يفعل فاعل is polysemous, it was literally translated as a grammatical term > *by the action of the doer (DS) and With a subject action (GT)*. Its underlying meaning depends on the context. For example, it implies that the identity of the doer of an action is either unknown or deliberately hidden. It also refers to an event that was planned by someone. In a political and social context, it is used to describe situations where external forces are suspected of causing disruptions. Personally, and psychologically, it implies that someone's downfall or misfortune was caused by deliberate actions rather than coincidence.

في خبر كان often implies that something or someone no longer exists or has disappeared. It suggests that the subject has faded into the past, much like the grammatical structure "خبر كان", which denotes a past state or action.

4.2.5 *Difficulties with Repetitions in AGTs*
DS, GT and MC had difficulties interpreting the meanings of repeated grammatical particles and repeated prepositions with ellipsis which create emphasis and rhetorical effects. Such expressions create a layered meaning. For instance, هل وهل وهل indicates yes/no questions without specifying the content of the questions. The purpose is not requesting an answer, rather it is rhetorical to emphasize things that the speaker has done but the listener is denying or oblivious of. Similarly, كم وكم وكم are used in interrogative questions. Repetition emphasizes a great quantity or frequency as in "كم وكم وكم من الأوقات ضاعت بلا فائدة!" which means many wasted moments. Another AGT in this category is على على على where "على" is a preposition meaning "on" or "upon". By repeating the preposition, the speaker is emphasizing things that have been done or occurred without mentioning them in detail as they are understood by the listener.

In the repeated adverbs بين, بين بين "بين" alone means between or in the middle. When doubled, it means so-so, i.e., neither very good nor very bad—just mediocre or average as in "هو بين بين، لا سعيد ولا حزين".

In the repeated conjunction و, و و "و" means "and". Repeating it suggests continuity, accumulation, or a long list!" It Implies an endless series of things that the speaker has done without mentioning them in detail.

It seems that AI has difficulty understanding the purpose of the repetition, ellipsis, ambiguity and emphasis in such expressions. By removing the rest of the questions and maintaining the three question particles only, the speaker uses repetition to carry the meaning indirectly to the listener, assuming that the listener understands the intent of the speaker and will be able to fill in the missing parts in the questions or prepositional phrases.

4.2.6 Problems with Culture-bound Meanings
Several AGT metaphors in the sample have a culture-bound meaning which DS, GT and MC failed to capture as in the following examples:

الحكاية فيها ان has the metaphorical meaning *"there is something fishy"*. MC gave the correct implied meaning probably because this metaphor has been used for a long time and is very common in the AI corpus. Historically, the phrase "إن فيها" originated from an incident that happened centuries ago when علي بن منقذ Ali bin Munqidh, could decipher a hidden warning in a letter by noticing the unusual use of "إنّ". The phrase came to signify suspicion or hidden motives in everyday conversations. Over time, it became a common Arabic expression for questioning the real intentions behind a situation.

داعش واخواتها was literally translated as *ISIS and its sisters.* Actually, this phrase has been recently used to describe extremist groups that share ideological similarities with ISIS. It highlights the family-like connection between these groups, emphasizing their shared roots in radical ideologies and their destructive impact on society.

الدول العربية مفعول به was literally translates to *Arab countries are the object.* But the underlying meaning is (Arab countries are at the receiving end, implying passivity or being acted upon, especially in a political context).

انت منا وعلينا was literally translated as *you are from us and upon us*, which is meaningless as it is translated word for word. This expression is used in Arabic culture to make a guest/visitor comfortable and feel at home. This means that the expression can be translated into "you are family, or you are part of us".

Moreover, some grammatical terms have been used in the names of TV shows or serials. For example: برنامج نون النسوة & برنامج نون النضال refer to women who made some contributions as writers and scientists with the latter referring to women who fought/called for freedom and human rights. The latter covers topics related to struggles, resistance, and social issues and provides insightful discussions and interviews with key female figures, offering perspectives on political and societal challenges. Another example is برنامج ضمير المتكلم which hosts personalities and have them express personal opinion, it allows the host and guests to present their views as if they were speaking in the "I" form. Similarly, "اللام الشمسية" (Lam Shamsiyya) refers to a specific type of definite article assimilation that occurs in pronunciation. "اللام الشمسية " was metaphorically adopted in as TV series which is an Egyptian social drama that explores sensitive societal issues. The show follows Nelly, who suspects that her stepson may have been harassed by a close family friend, leading her on a dangerous journey to uncover the truth. The term اللام الشمسية literally solar /l/ exemplifies a pronunciation rule in words starting with sun letters (حروف الشمسية), the definite article "ال" (Al) is not pronounced as "L", but instead merges into the following letter.

The Islamic expression يا من امره بين الكاف والنون was correctly translated by MC, DS and GT "O You whose command is between the letter 'Kaf' and 'Nun', with a slight variation in the pronoun. In the Islamic context, this phrase refers to divine power and creation. MC, DS and GT had no difficulty translating, probably because the Arabic expression and its translation are very common in the AI corpus.

5. Discussion

5.1 Comparison with Prior Studies
AGTs can carry layers of meaning that might not directly translate into other languages, especially when used metaphorically. Findings of the current study showed that translating AGTs metaphors to English is challenging for AI. DS, GT and MC tended to translate the AGTs word-for-word, as a grammatical term, not as a metaphor. The AGTs were translated as metaphors in less than 27% of the sample. This means that DS, GT and MC failed to understand the underlying meaning and cultural contexts in which they are used, when the terms are used literally and when they are used metaphorically.

DS, GT and MC seem to have more difficulty in translating AGTs used metaphorically than translating other types of expressions and specialized compound terms in prior studies conducted by the author uisng MC and GT in translation. The percentage of correct translations given by DS, GT and MC is smaller than that of correctly translated zero expressions (29%) (Al-Jarf, 2026c), Gaza-Israel War terminology (48%) (Al-Jarf, 2025b), and medical terms (68.6% for MC and 74.5% for GT) (Al-Jarf, 2024bc).

Findings of the current study are partially consistent with findings of some prior studies that used a variety of MT systems in translating proverbs, idioms and metaphors. For example, in translating proverbs, Jibreel (2023) reported that the most common strategies used in translating proverbs by MT was literal, semantic and communicative translation respectively. Bing provided the most accurate translation and yielded communicative proverbial equivalents. Bing and Google were equal in providing semantic equivalents. Yandex was the least accurate. MT missed the implied meaning, provided poor structured equivalents, wrong synonyms and distorted meanings. ChatGPT failed to translate the cultural aspects of proverbs. It mainly used literal translation, partial equivalence and, paraphrase and gave faulty lexical items. It failed to connote the intended meaning of the proverbs and showed distorted meanings and "comprehension errors" (El-Saadany, 2024).

In MT translation of idioms, Obeidat, Haider, Tair and Sahari (2024) found that GT rendered the highest percentage of literal translation (76%), ChatGPT (53%), and Gemini (21%). For sense-based translations that use nonfigurative language, Gemini yielded (63%), ChatGPT (35%) and GT (11%). The translation of idioms using figurative language was the highest by Gemini (16%), ChatGPT (13%), and GT (12%). The researchers concluded that although there is a great improvement and advancement in technology, MT still needs to master nonliteral language such as idioms. Although MT systems could not generally provide accurate translations of English idiomatic expressions in six online newspapers to Arabic, Bing was the best and had a better performance compared to GT which was the least accurate as some words were not translated at all, and others were mistranslated (Musaad, & Al Towity, 2023). In Himdi's study (2024) transformer-based models outperformed deep learning models trained by word embedding to detect Arabic idioms and literal statements, reaching 97% in favor of DistilBERT. The researcher also enhanced the accuracy through the ensemble stacking method, boosting it by 0.8 points. Furthermore, Himdi proposed a novel interpreter of Arabic idioms that offers simple explanations for selected idiomatic contents within the literal text. In translating idioms from English-to-Arabic and vice versa by GPT-4 and Claude-2, results showed a preference for literal translation with a secondary emphasis on meaning (Hakami, & Abomoati, 2024). In Hamoud's study (2024), English food idioms had different meanings when translated to Arabic by ChatGPT. The intended meaning of the selected texts was lost due to the nature of the English food idioms.

Similar results were found in translating literary metaphors in Serbian poetry into English. The interpretations of literary metaphors by GPT-4 were superior to those provided by a group of college students. In interpreting reversed metaphors, which require recognizing implicit meaning, GPT-4, as well as students, demonstrated signs of sensitivity to the Gricean cooperative, particularly relevance and manner, ensuring their interpretations were coherent and contextually appropriate. These results highlighted how AI models such as GPT-4 are starting to mimic human cognitive processes, particularly in language comprehension and reasoning. AI models acquire a remarkable ability to interpret literary metaphors (Ichien, Stamenković, & Holyoak, 2024).

Compared to findings of a study with student translators, the challenges that undergraduate student translators faced in translating polysemes from English to Arabic and vice versa were in translating polysemous compounds. Like MC, DS and GT, the students resorted to literal, word for word translation and the percentage of correctly translated polysemes was low as in the case of translating AGT metaphors that are polysemous by MC, DS and GT (Al-Jarf, 2022c).

5.2 Why AI Faces Difficulties in AGT Translation

Matyakubova (2024) indicated that metaphorical expressions pose obstacles for MT systems because of their nuanced, cultural and context-specific nature as they are not always directly translatable word for word between languages. Skrynnikova (2024) added that the main barriers to AI's human-like interpretation of figurative natural language are the absence of a physical body, the inability to reason by analogy and make inferences based on common sense, the latter being both the result and the cognitive process in extracting and processing information.

Moreover, AI struggles with metaphor translation because it relies on pattern recognition rather than deep semantic understanding, which can sometimes lead to inaccurate translations—especially when dealing with figurative or culturally embedded language. Capturing cultural idioms, metaphors, and context-specific meanings accurately requires deep understanding of both English and Arabic cultures, which is difficult for AI to achieve. AI models primarily rely on direct word mappings. Metaphors require an understanding of cultural and linguistic context that AI does not always grasp. Many translations lean toward a word-for-word approach rather than considering the deeper metaphorical intent. If certain Arabic grammatical metaphors are not widely used in available training data, AI may not recognize them accurately. Some AI Translators rely on statistical models, predicting words based on previous patterns rather than fully grasping intent. They can misinterpret figurative language or cultural nuances. AI often struggles with ambiguity, sometimes picking the most statistically common translation rather than the most accurate one for a specific context. AI typically translates idioms literally unless trained on context-specific data, which can lead to odd or nonsensical results. AI operates within learned structures and struggles with adaptation beyond its training data.

Some phrases change meaning depending on the situation or audience. Without enough context, AI might have misinterpreted the intended nuance. Certain expressions carry historical, political, or social weight. If AI is not fully aware of the cultural significance, the translation will lack depth. Some Arabic expressions play on grammatical rules, like "أنا ممنوع من الصرف". Automated translation tools often misinterpret such phrases as (I am prohibited from being inflected) because they treat them as purely grammatical structures, rather than conceptual metaphors.

Both GT and DS pull from large multilingual corpora, but if their training data contains incorrect translations, they might perpetuate errors without recognizing the need for refinement. If a phrase is not common enough in their datasets, they might default to a literal and misleading translation. Unfortunately, the availability of high-quality parallel corpora (texts in both English and Arabic) is limited, hindering the training of effective AI translation models.

5.3 Why DS, MC, and GT Gave Identical Equivalents

For some expressions, DS, MC, and GT gave identical equivalents because: (i) Many translation models, including DS and GT rely on large parallel corpora—databases of translated texts that are used to train AI. If the same phrases exist in these corpora with established translations, AI models tend to reproduce them identically. (ii) When dealing with simple, straightforward expressions, AI translation models often opt for direct word-for-word equivalence rather than interpreting meaning more deeply. That is why figurative, or rhetorical phrases might get overly simplified in machine translations. (iii) AI translation systems often use probability-based approaches. If multiple models rely on similar algorithms (such as transformer-based neural networks), they might arrive at the same most-likely translation. (iv) Some phrases are rigidly structured, meaning there's little room for variation in translation. For example, terms grounded in Arabic grammar like "الفاعل والمفعول" (The subject and the object) have limited ways to be reworded in English. (v) Since many AI models translate sentences independently rather than within broader discourse, they might generate the simplest form of translation rather than adapting to implied meanings. (vi) If widely used sources (such as dictionaries or human-translated texts) contain standardized translations of certain expressions, AI systems often inherit those without deviation.

6. Recommendations & Conclusion

While AI is powerful for providing quick translations, human expertise is still necessary for nuanced, creative, or culturally sensitive language. That is why reviewing AI translations critically—especially for something like AGT metaphors and fixed expressions—is crucial. This means that human intervention or specialized domain adaptation improves accuracy of metaphorical expressions.

Since AI translation technology continues to improve overtime, and researchers are working on addressing these issues to provide more accurate and reliable translations, interactive AI like MC refines its approach to recognizing complex expressions through users' questions that usually guide AI toward more detailed explanations rather than just translation. This interaction helps AI tailor responses better to the user's needs. User discussions encourage AI to analyze the implied meanings behind phrases rather than just their dictionary equivalents. AI pays attention to how the user reacts to the answers. If previous translations seemed unsatisfactory, AI aims to refine its responses to better align with the user's expectations. Clarifications and feedback are important for refining AI translations through discussion as AI will understand the deeper meanings better. If another user asks, AI might immediately offer a more nuanced translation instead of a literal one. Through interaction, AI continuously adjusts its approach to capture expressions more accurately. Since users' discussion with AI might refine its understanding, AI response to another user might reflect those improvements.

Furthermore, to improve MT systems and to get accurate and better-quality translation, Musaad and Al Towity (2023) recommended that MT systems deal with idiomatic expressions as a unit and not as individual words. Since these are fixed idiomatic expressions, they are usually resolved using a simple memory translation, which sets side-by-side the English and the Arabic expressions without much cognitive effort.

Taking the limitations of AI in translating metaphors, in general, and AGT metaphors, in particular, translation students, instructors and professional translators should use AI with caution. They should be aware of nuances in meanings, develop intercultural pragmatic knowledge in order to avoid faulty comprehension and be able to convey the intended meaning. Raising students' awareness of the weaknesses that AI has in translating AGT metaphors is essential. They first need to understand the meaning of AGT metaphors as الحكاية فيها أن, by searching Google and relevant dictionaries to understand the meaning and the context in which it was first used and the context in which it is currently used (Al-Jarf, 2022e; Al-Jarf, 2020; Al-Jarf, 2014; Al-Jarf, 2011). Students need to revise translations rendered by AI and post-edit them, fixing semantic, syntactic, lexical and contextual errors in them. The students can use a variety of translation technologies, Translation Memories and dictionaries to store their translations for later reference and for compiling their own classified glossaries (Al-Jarf, 2017b; Al-Jarf, 2009).

Since there is insufficient research on AI translation of special types of Arabic metaphors, future researchers may investigate other types of metaphorical and fixed expressions as expressions of impossibility (Al-Jarf, 2024b), verses of impossibility in the Holy Quran (Al-Jarf, 2024d), ibn (son) and bint (daughter) fixed expressions (Al-Jarf, 2023a), numeral-based formulaic expressions (Al-Jarf, 2023b), time metaphors (Al-Jarf, 2023c), dar (house) and bayt (home) expressions (Al-Jarf, 2022a), common names of chemical compounds (Al-Jarf, 2022d), color-based metaphorical expressions (Al-Jarf, 2019), Arabic om- and abu-expressions (Al-Jarf, 2017a), binomials (Al-Jarf, 2016b), neologisms ((Al-Jarf, 2010), food, body parts, life and death, landscape, animal, plant, flower, money, sister and brother metaphors, Islamic politeness expressions, and others using a variety of AI tools, especially emerging ones such as DeepSeek, Meta AI, Gemini, Poe and the like. Future studies can also compare AI translation of such metaphorical and fixed expressions with those of human translators.

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