



Human Interpretation and Machine Translations Based upon Interviews with Director Joon-ho Bong

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Received: February 27, 2023
Revised: March 15, 2023
Accepted: March 22, 2023

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ABSTRACT

Lee, Jeong-Hwa and Kyung-Whan Cha. 2023. Human interpretation and machine translations based upon interviews with director Joon-ho Bong. *Korean Journal of English Language and Linguistics* 23, 204-219.

The study investigated differences in human interpretation and machine translation in Korean interviews of director Joon-Ho Bong. English content for Bong's Korean interviews was taken from interpretations by Sharon Choi, Google Translator and Papago Translator. The analyzed corpus data included 669 different English syntaxes (223 sentences uttered by Sharon Choi, 223 Google English translations, and 223 Papago English translations) in total gleaned from six videos publicly shared on YouTube. Of 223 sentences, 207 (92.8%) were correctly translated by Choi compared to 166 (74.4%) rendered by Google Translator and 167 (74.9%) correct translations by Papago Translator is expected that Ms. Choi would have a challenging assignment with a considerable risk of real-time interpretation errors. Contrary to common predictions, the results suggest that human interpretation to appropriate word choices and grammar continues to be more accurately applied than the translation of the two machine translators. The AI programs committed translation errors in word choices because they had difficulty recognizing the subtle colloquialism, fragments, and run on sentences that are commonly present in spoken language.

KEYWORDS

interviews with Joon-ho Bong, Sharon Choi, human interpretation, machine translation, Google translation, Papago translation, real time language

1. Introduction

Director Joon-ho Bong's film *Parasite* won the International Film Award at the 92nd Academy Awards, as well as Best Picture, Best Director, and Best Screenplay. Since its inception in 1929, the movie *Parasite* is the first film produced in a foreign language other than English to be so heartedly recognized by the Academy. This may be indicative of how difficult it is for a film not produced in English to win an Academy Award. Given the achievements and recognition of *Parasite*, the world's focus was on director Bong and Sharon Choi, who interpreted his acceptance speech. First of all, in monumental events that attract attention around the world, such as the first Oscar to win in a foreign film, it is rare for an interpreter to appear in the video.

On this rare monumental occasion, where a second language was not native to the prize winner, attention focused much more intensely on director Bong's interpreter who appeared in the 'spotlight'. Normally, interpreters are merely shadows behind the scenes in such events. As noted by other sources, "it is not common for her (the interpreter) to receive public attention" (Kwon 2020). Sharon Choi was born and raised in Korea and is not a professional interpreter with interpretation training. She completed her elementary, middle and high school study in South Korea. Following this, she majored in film, arts and media studies at the University of Southern California in the United States. In a media interview, Bong praised Sharon Choi as her language avatar. In one media outlet, a professional interpreter described Sharon as having a good understanding of Korean and American culture, selecting vocabulary, and providing interpretations consistent with Joon-ho Bong's intention. Choi's language and cultural background, combined with her training specific to the film industry provided her with a unique skill set needed to serve as Bong's interpreter more effectively (Choi 2022).

Recently, machine translators equipped with artificial intelligence have made many advances, and they are widely used by countless people around the world as they are easy to access ubiquitously. Advances in artificial translation technology have greatly increased the accuracy of machine translation and made it more widely available and cost-efficient (Ann and Chung 2020, Lee and Cha 2022, Park and Kim 2021). However, this rapid growth needs careful study to ensure that these mechanical translations accurately reflect human meaning. The human-computer is a highly complex machine driven by culture, emotion, and logic, thus making translation is a highly sophisticate process for AI technology. For example, the quality of Korean-English machine translation is still relatively low due to the syntactic and morphological differences between English and Korean languages, cultural differences that underlie these languages, as well as the depth and breadth of data used by the language algorithms (Lee and Cha 2019b). In the era of the Fourth Industrial Revolution, machine translators serve as a major language aid for communicating in foreign languages (Lee and Briggs 2021, Tsai 2019). However, since translation errors are still frequently found, it is difficult for users to fully trust and use machine translators. Therefore, machine translators are a promising artificial intelligence technology that needs to be further developed.

The goal of this study was to examine the differences between an interpreter's (Sharon Choi) interpretation of Korean interviews with director Joon-ho Bong and translations using Google Translator and Papago Translator. One of the needs of our research is to find out which is more accurate between human interpretation (HI) and machine translation (MT), and what is the difference between them. In the existing research on HI and MT, Korean-English translation was performed using a machine translator based on pre-written manuscripts such as news, novels, and speeches. A unique aspect of this study was that real-time language spoken by director Bong and interpreted by Sharon Choi was used. There are two reasons why we used both Google and Papago translators: to increase reliability of MTs' accuracy and to compare the two outputs. This distinguishes this research from other studies that have been previously conducted in that it more closely reflects conversational language usage. To that purpose, the following two issues were the foci of the study:

- 1) How accurate are HI and the Google and Papago translations?
- 2) What are the prevailing errors in grammar, vocabulary, and content that appear in HI versus MT?

2. Literature Review

2.1 Machine Translation vs Human Interpretation

Ever since machine translation (MT) for military purposes was started with written language translation by Warren Weaver back in 1950s in the United States, its quality of technological advancement has been remarkable as AI's (artificial intelligence) deep learning, natural machine translation (NMT), and algorithm development (Hutchinson 1988, Lee 1995, Park and Uhm 2020, Seo and Kim 2018, Slocum 1985, Yu 2018). MT has been applied to almost all of major written and spoken languages including English, French, German, Russian, Arabic, Chinese, Japanese, not to mention of Korean (Chun 2019 Fang, Ge and Song 2016, Lee and Cha 2019a, Mah 2018, Park and Uhm 2020, Wu et al. 2016).

Human translation (HT: hereafter) will be used with human interpretation (HI) interchangeably in this paper. HT studies has been influenced by following features: source-target language transfer, cultural context and translators' individual ability (Li Graesser and Cai 2014). Some of pro-tech scientists predict that we will meet the singularity stage in the near future because of the following reasons: Tech accumulation, AI advancement, use of big data, speed and robustness of translation, and copious language copular (Mah 2018). In spite of the above reasons, others contend that HI will out-perform MT. Chun (2019) strongly contends that MT will not pose a threat or challenge to the HI in the field of literary translation, which requires advanced language ability, text analysis ability, ability to understand subtext, context and situation, and intercultural communicative competence. In addition, in the case of spoken language translation, HI reveals its advantages over MT, mainly because spoken language is live, changing constantly, and HI is able to grasp interlocutors' intentions. We can find a simple example in the translation of a recent world-famous Korean movie, *Parasite*; in case of 서울대학교 (Seouldehakyo), MT translates it literally as Seoul National University, rather HI interprets as Oxford University to show that Seouldehakyo is the top-notch university of Korea for the purpose of delivering the word meaning more context-embeddly. Mostly MT translates passages literally and superficially, rather HI may use interpreter's leeway and creativity for the sake of reader/listener's better interpretation in the context (Chun 2019, Lee and Cha 2022, Lexcode 2020, Park 2020, Wu et al. 2016).

Although Sharon Choi was not a professional interpreter, she received a sudden limelight from the world media after interpreting movie director Joon-ho Bong's speech at the Academy Awards in 2020. Sharon's interpretation shocked professional interpreters and interpreting professors. There are five published articles on Sharon Choi's interpretation. One is interview notes with her, and four scholastic papers. Lee (2021) investigated Sharon's interpretation in three ways, starting with the domain of translation's deprofessionalization, and key factors behind her success, and finally discusses how Sharon's outstanding performance challenges existing translation theories and translator training. Shin (2020) surveyed with her 53 graduate students majoring in interpretation and translation regarding how they evaluate not-certified interpreter Sharon Choi's performance. She used the survey results to discuss the conditions for successful interpreters and the competitiveness of good interpreters. Kwon (2020) studies Sharon's case to see how the public perceives interpreters on social media by sampling keywords and topic modeling analysis from a dataset of 4,192 comments. From the perspective of systemic functional linguistics, Choi (2022) exalted Sharon's interpretation that she made Bong's hidden intentions surface successfully, while keeping the characteristics of the English language.

2.2 Criteria of MT Errors

There is no standardized types of errors in MT that all scholars agree on. Translation quality goes with fluency, accuracy(fidelity), and fitness for purpose. Among the three aspects, the key area of quality is semantic accuracy (Koponen 2010). With the advent of AI technology, MT errors have been greatly reduced. In most cases of written works, HI may be replaced by MT. However, delicate culturally loaded expressions in written works as in literature works and some parts of spoken languages will remain as a HI domain (Chun 2019, Mah 2018). Interestingly, the accuracy rate of MT shows a significant difference among targeted languages. For example, western European languages show 90-95% accuracy (Lee et al. 2016). On the other hand, the Korean language still shows a low accuracy rate, maybe due to insufficient data accumulation and cultural differences (Lee 2019, Lee and Cha 2019b, Lee and Cha 2022).

In addition, Mah (2018) contends that the Korean language has its own peculiarity of ambiguity, plain prose and repetition to English of precision, dynamism and concision. It is not easy to define the aspects or relations of MT errors because of languages' multifaceted characteristics. Vilar et al. (2006) delineate five types of MT errors: missing words, incorrect words, word order, unknown words, and punctuation. Zhou et al. (2013) in an English-Chinese MT analysis analyze errors into seven categories: incorrect words, missing content words, wrong word order, translation with meaning contrary to the original, errors of the named entity, and errors of numeral and quantifiers/temporal words, and others. A simpler version of MT errors is done by Fang, Ge and Song (2016) with three kinds: incorrect word choice, structural errors, and constituent missing. The quality of MT is affected by several factors, such as language pairs, text types, and subjects/topics. Among them, the text type is the most prominent (Raido 2016). Koponen (2010) demonstrates that both between MT and HI showed differing patterns in her error analysis. In Korean MT research, Lee (2020) compared the results of two Google translations by using a Korean essay written by 15 university students in 2017 and translated into English using Google Translate, then reusing the same essay in 2020 and translating it again into English using Google Translate. According to the research results, the frequency of Google translation errors in 2020 decreased by 83.1% compared to the total number of errors in 2017. Additionally, the report stated a significant decrease in vocabulary-related errors caused by literal translation, a major issue in machine translation. Lee and Cha (2022) analyzed errors in Korean colloquial expressions translated into English using the Papago translation tool. They categorized translation errors into four types: inaccurate meaning, omission, grammatical, and mechanical errors. Out of 777 Korean colloquial sentences translated, 343 (44.1%) contained errors. Among these errors, 286 (83.4%) were inaccurate meaning errors, 36 (10.5%) were grammatical errors, and 19 (5.5%) were omission errors. Lee (2019) studied error types using two MT systems: Google Translate and Papago. The study analyzed a total of 1039 sentences from four novels: "Vegetarian," "Poor Man's Wife," "Lucky Days," and "Spring." The MT errors were categorized into omission, contextual understanding, long sentence processing, unregistered word processing, and unexpected errors. The study's findings revealed that using MT systems, including Papago, can create problems conveying the original work's meaning and delivering the intended reading experience. Additionally, the study concluded that using a general-purpose MT system for literature translation is only feasible in a limited capacity and requires ongoing human intervention. Seo and Kim (2018) utilized the annual reports of three foreign companies with no Korean branches as research data to examine MT performance. A total of 914 English sentences were translated into Korean using Google Translator. MT errors were categorized into accuracy, readability, and syntax misalignment. They found that Google Translate produced many semantic-centered errors in the accuracy category, relatively few omission errors, and word and clause arrangement errors that occurred together with incomplete sentence errors. Finally, the study reported that typos appeared randomly without showing specific tendencies. Seo and Kim (2018) suggested that the MT and HI should work together cooperatively rather than competitively for a better language interpretation.

Previous studies in Korea have explored error types of MT using various texts such as novels, essays, Korean spoken language, the annual reports of foreign companies, etc., with different error criteria. However, unlike previous studies on HT and MT or comparative studies on the quality of varying MT, this study aims to compare

HI and MT. To achieve this goal, we applied the error type criteria of MT, with grammar, vocabulary, and content appropriate for this study, based on the MT error types used in earlier research (Lee and Cha 2020, Seo and Kim 2018).

3. Method

3.1 Data Corpus

This study was conducted between July 2022 and February 2023. Data for this study was collected from six YouTube videos of Director Bong (Table 1). A total of 223 samples consisting of words, phrases, and sentences (hereafter referred to as “syntaxes”) were identified. In terms of this data, researchers chose to divide the corpus in this manner, given the tendency for speech to be ‘give-and-take’ exchanges that are a natural part of spoken interactions. These 223 exchanges were analyzed using three steps. First, Director Bong’s Korean statements were transcribed by the researchers. Second, Sharon Choi’s English statements were dictated. Third, Director Bong’s remarks were translated into English using both Google Translator and Papago Translator. This process resulted in a total of 669 English syntaxes. From these, Sharon Choi’s English interpretation of Bong’s was chosen as analysis. In cases where there was overlapping content in Bong’s interviews, partial YouTube videos were analyzed in order to avoid duplication of content.

Table 1. List of Selected Videos

Number	The title and the link of the videos
1	Parasite... A delightful interview that goes all the way / Joon-ho Bong and Interpreter Sharon Choi https://www.youtube.com/watch?v=iU05tRjM4RA
2	From jokes to nuances ... 10 reasons why Sharon Choi is the best interpreter https://www.youtube.com/watch?v=6SrYt90mtKE&t=279s
3	Without Sharon Choi, what would Bong have done for the interpretation... 5 decisive scenes that director Joon-ho Bong relied on https://www.youtube.com/watch?v=xvvK_JOJbrQ
4	Four Oscars for Parasite – Joon-ho Bong Award acceptance speech + interview collection (interpreter Sharon Choi) https://www.youtube.com/watch?v=9G9INFemE7Y
5	Extracts of Sharon Choi’s English interpretation videos (with repetition) (Joon-ho, Bong and Parasite, Sharon Choi, Parasite) https://www.youtube.com/watch?v=dCfvPAIV9Tk
6	Sharon Choi Reads Director Joon Ho Bong’s Mind – The Human Interpretation Machine! https://www.youtube.com/watch?v=MXamC3JzhEE

3.2 Data Analysis

For the purpose of interrater reliability, IBM SPSS Statistics 23 to undertake Cohen’s Kappa Coefficient reliability assessments and error frequency counts for HI and Google and Papago translations. Error analysis elements for HI and were applied based on error items used in the existing machine translation error analysis study

(Lee and Cha 2022, Vilar et al. 2006). The margin of error in the error analysis test was determined to be good for analyzing the difference between HI and MT, taking into account the Korean interview transcript involving the director Bong’s interview, the interpretation provided by Sharon Choi, and the unique characteristics of Korean spoken language. The researchers utilized fundamental grammar, vocabulary and content analysis to examine the errors in Choi's interpretation, Google’s translation, and Papago's translation. Error types were grouped into three categories and more detailed sub-categories as displayed in Table 2. Vocabulary errors involved word choice, and awkward phrases and clauses characteristic of colloquial language. Basic grammar errors included misuse of countable and uncountable nouns, incorrect or missing article usage, incorrect or missing pronoun usage, lack of subject-verb agreement, incorrect tense usage, inaccurate or omission in preposition usage, and other order and sentence structure problems. The third error group included content errors such as omissions and extraneous additions of information not included in Bong’s remarks. Therefore, one syntax is composed of phrases, clauses, and sentences. When the researchers found errors in syntax that overlapped in terms of error type, the errors were reported in all relevant error categories and sub-categories. Due to potentially inaccurate results that might have "accidentally" existed in the calculation, the Kappa test was also used given its higher threshold than the other evaluation techniques (Viera and Garrett 2005).

Table 2. Error Categories and Sub-Categories in HI and MT

Error Categories	Sub-Categories
Grammar	Use of Countable and Uncountable Nouns
	Pronoun Usage
	Article Usage
	Subject-Verb Agreement
	Tense Usage
	Preposition Usage
	Other Word Order and Sentence Structure Problems
Vocabulary	Word Choice
	Awkward Word, Phrases and Clauses
Content	Omission
	Extraneous Additions

4. Results

4.1 The Results of HI and Accuracy Rates and the Cohen’s Kappa Coefficient

The varying accuracy rates between Sharon Choi's interpretations, Google Translate, and Papago results are shown in this section. In addition, it was demonstrated that reliability tests between the two researchers could be checked using Cohen's Kappa coefficient.

Choi accurately translated 207 (92.8%) sentences out of 223 sentences. Of the total 223 sentences, 166 (74.4%) syntaxes were accurately translated by Google Translator, and 167 (74.9%) sentences were accurately translated by Papago Translator. Overall, Choi’s interpretation was more significantly accurate in Korean-English translation than the machine translation of Bong’s interviews. We assessed the accuracy of syntax in HI, as well as in Google and Papago translations. To verify the reliability of the error analysis, a test was conducted by the two researchers involved in this study. For this test, both researchers used 336 syntaxes, half of which involved human interpretation, Google translation, and Papago translations, in a reliability test to assess the interpretation and

human translation errors (112 human interpretations, 112 Google translations, and Papago translations from Director Bong's interviews. The Kappa coefficient is $k = .731$ $p = .000$. According to Landis and Koch, this indicates that the dependability between the two researchers is good.

4.2 Analysis of HI Errors and MT Errors

In this section, the results of error analysis related to Choi's interpretations, Google translations, and Papago translations are presented related to grammar errors, vocabulary errors, and content errors. Table 3 shows frequency counts for three categories related to Choi's interpretations, Google and Papago translations. With regard to Choi's interpretations, grammar errors were identified 11 times (64.7%), vocabulary errors occurred five times (29.4%), and content errors appeared one time (5.9%). Regarding Google translations, 13 cases (22.4%) of grammar errors, 44 cases (75.9%) of vocabulary errors, and one case (1.7%) of content errors appeared. Furthermore, at the general category level (grammar, vocabulary, and content) of error analysis, there were 57 distinct errors made by the Google translator.

Table 3. Error Rates for HI and MT on Three Criteria

Error Categories	Choi's Interpretations' Error Frequency (Rates)	Google Translations Error Frequency (Rates)	Papago Translations Error Frequency (Rates)
Grammar	11 (64.7%)	13 (22.4%)	14 (24.6%)
Vocabulary	5 (29.4%)	44 (75.9%)	41 (71.9%)
Content	1 (5.9%)	1 (1.7%)	2 (3.5)
Total	17 (100%)	58 (100%)	57 (100%)

Using a more detailed category and sub-category analysis, 58 total errors were identified. This is attributed to a syntactic aspect having two error types within it. For the translations performed by Papago, out of 57 translation errors, 41 cases (71.9%) of vocabulary errors, 14 cases (24.6%) of grammar errors, and two cases (3.57%) of content errors were identified. In terms of Papago error analysis, at the general error analysis category level, Papago produced 56 errors. In the sub-category error analysis, Papago's produced 57 errors. As was the case, with the Google translator, Papago also produced one error in syntax that overlapped into two different sub-category error groups.

4.2.1 Errors and Examples of HI by Subcategory

This section provides a summary of statistical data regarding the frequency of subcategory errors in Choi's interpretation. Additionally, it includes samples of each specific type of error that has been identified in the interpretation. Each category is further broken down to show more detailed insight into the type of error. As shown in Table 4, there were two countable and uncountable noun usage errors, six preposition errors, as well as, one article error, and one word order error within the grammatical error subcategory. There were no pronoun usage errors and subject-verb agreement errors. Under the content category, an omission error was found. Overall, Sharon Choi was found to have the highest grammar error rate among the three error criteria.

Table 4. The Results of Sub-Category Errors in HI

Error Categories	Sub-Categories	Frequency
Grammar	Use of Countable and Uncountable Nouns	2 (18.2%)
	Pronoun Usage	0 (0%)
	Article Usage	1 (9.1%)
	Subject-Verb Agreement	0 (0%)
	Tense Usage	1 (9.1%)
	Preposition Usage	6 (54.5%)
	Other Word Order and Sentence Structure Problems	1 (9.1%)
Vocabulary	Word Choice (poor synonym choice)	5 (100%)
	Awkward Word, Phrases and Clauses	0 (0%)
Content	Omission	1 (100%)
	Extraneous Additions	0 (0%)

The syntaxes in Table 5 deal with different types of grammar errors. As displayed in Table 5, the interpretations are based on the original texts, which are taken from Director Bong's statements written in Korean. In syntax 1, Choi translated the phrase as “a lot of interests in characters and individuals”. Yet, in this instance interest is more commonly used as an uncountable noun, as in “a lot of interest in characters and individuals”. In syntax 2, Choi translated the phrase as “a everyday mundane moment”. However, because the first letter in every day starts with a vowel sound, the article “an” should be used instead of “a”. In syntax 3, Choi interpreted the phrase as “about this man who have been living”, but in this phrase, “this man” is a 3rd person singular reference. The correct grammar would be “has been living” rather than “have” in the relative clause. In syntax 4, Choi translated the phrase as “In the last two days in filming”. This is incorrect because, in this phrase, it is natural to use the preposition ‘of’ instead of ‘in’, so it would instead be “In the last two days of filming”. In syntax 5, Choi translates the phrase as “very perverted great idea”, but in modern English it is more appropriate to use the adjective “great” first, followed by “perverted”. We also understand that some ungrammatical sentences or expressions are commonly used in a colloquial situation, not acceptable in written language otherwise.

Table 5. Examples of Grammar Errors in HI

Bong's Remarks	<ol style="list-style-type: none"> 근데.. 항상 장르적인 흥분 내지는 재미가 있는 영화를 할려고 하는데, 대신 제가 캐릭터 여기 있는 주인공들도 계시지만 인물들 한테 관심이 많다 보니까 인물들에 대해서 자꾸 파내려 가다 보면 웬지 음..... 음.. 기생충 같은 경우는 인제..소파위에서 어떤 부부들의 어떤 부부의 어떤 일상적인 순간 어 정말 피약별 정말 강한 피약별에서 그 씬을 찍어야 된다 라고 저랑 우리 그 DP는 촬영 감독은 처음부터 생각을 했었거든요. 그 지하에서 몇 년간 지내던 남자가 마침내 엄청난 햇빛아래 나와서 그 유혈극을 펼치는 거니깐 그래서 정말 더더욱 그런 힘든 날씨였죠. 그래서 촬영하다가 마지막에 이틀에 거기 물을 집어넣고 오늘 약간 외관상 변호사나 회계사의 모습이기는 하지만 실제로는 변태적인 아이디어로 가득 찬 그런 멋진 저의 공동 작가 한진원씨를 소개하겠습니다.
Choi's Interpretations	<ol style="list-style-type: none"> I really pursue the excitement and entertainment that comes from the genre itself. But I always have a lot of interests in characters and individuals. (Countable and uncountable noun error)

	<p>2. In parasite, they're having sex on the sofa but it's a everyday mundane moment between this married couple. (Article usage error)</p> <p>3. So that's why we chose that day. Because essentially that scene is about this man who have been living in this bunker for years coming out all of sudden to begin this blood bath and that's why we had to shoot in such a hot day. (Subject-verb agreement error)</p> <p>4. In the last two days in filming, in that water tank we poured water for the flood sequence. (Preposition error)</p> <p>5. And my great partner in writing is here. Today he looks like a lawyer or an accountant, but he is always filled with very perverted great ideas. (Word order error)</p>
Proofreading	<p>1. I really pursue the excitement and entertainment that comes from the genre itself. But I always have a lot of interest in characters and individuals.</p> <p>2. In Parasite, they're having sex on the sofa but it's an everyday mundane moment between this married couple.</p> <p>3. So that's why we chose that day. Because essentially that scene is about this man who has been living in this bunker for years coming out all of sudden to begin this blood bath, and that's why we had to shoot in such a hot day.</p> <p>4. In the last two days of filming in that water tank, we poured water for the flood sequence.</p> <p>5. And my great partner in writing is here. Today he looks like a lawyer or an accountant, but he is always filled with very great perverted ideas.</p>

Table 6 contains examples of the different types of vocabulary errors in human translations. Director Bong called out the names of the actors who appear in Parasite one by one. However, instead of calling the actors by name, Choi translated it as “the actors and crew members of Parasite”. Her interpretation was relatable to viewers of the video.

Table 6. Examples of Vocabulary Errors in HI

Bong's Remarks	우리 사랑하는 송강호님, 이선균, 최우식, 장혜진, 박명훈, 박소담, 이정은 멋진 배우들.. 그리고 저의 비전을 실현할 수 있도록 해준 에.. 바른손과 CJ와 위원회 모든 분들께도 감사드립니다.
Choi's Interpretations	Please send a round of applause to the actors and crew members of Parasite. I also thank everyone at Brunson, CJ, and Hyeon, who allowed me to actualize my vision. (Word choice error)
Proofreading	Please give a round of applause to the actors and crew members of parasite.

The sentences in Table 7 address several kinds of content errors that result from human interpretations. Director Bong said the following sentence in Korean, “So when you watch a movie, the end of the movie can be a bit sad”.

Table 7. Examples of Content Errors in HI

Bong's Remarks	그래서 영화를 보면 영화의 마지막이 조금 슬플 수 있죠.
Choi's Interpretations	And that's what I tried to do ending this film. (Omission)
Proofreading	So, if you watch this movie, the end can be a little sad .

Choi interpreted it as “And that's what I tried to do ending this film”. In Choi's interpretation, director Bong's

words that the end of the movie could be sad were omitted. Therefore, interpreting this sentence as “So, if you watch this movie, the end can be a little sad.” is considered to accurately convey Bong's remarks.

4.2.2 Errors and Examples of MT by Subcategory

This section provides statistical data on the frequency of subcategory errors in the translations of Google and Papago. For further illustration, it also provides samples of each distinct error type found in their translations. The purpose of this information is to offer insight into the translations produced by these two popular translation platforms, and to help users better understand the potential errors that may arise in their translations. To provide further clarification, examples of each specific error type identified in their translations are also included. Table 8 includes the results for sub-category errors found in Google Translations. In the subcategory of grammatical errors, countable and uncountable noun errors occurred in one instance, along with five pronoun errors, two article errors, one tense error, and four preposition errors. There were no mistakes with subject-verb agreement and sentence structure.

Table 8. The Results of Sub-Category Errors in Google Translations

Error Categories	Sub-Categories	Frequency
Grammar	Use of Countable and Uncountable Nouns	1 (7.7%)
	Pronoun Usage	5 (38.5%)
	Article Usage	2 (15.4%)
	Subject-Verb Agreement	0 (0%)
	Tense Usage	1 (7.7%)
	Preposition Usage	4 (30.8%)
	Other Word Order and Sentence Structure Problems	0 (0%)
Vocabulary	Word Choice (poor synonym choice)	30 (68.2%)
	Awkward Word, Phrases and Clauses	14 (31.8%)
Content	Omission	1 (100%)
	Extraneous Additions	0 (0%)

There were 30 word-choice errors and 14 errors resulting from awkward word choice, phrases, and clauses within the vocabulary subcategory. There were no extraneous additions in the content category. Overall, of the three error criteria, Google translations had the highest error rate in the vocabulary category.

Table 9 shows the frequencies of sub-categories for three error criteria in Papago translations. In the subcategory of grammatical errors, there were four errors related to the use of countable and uncountable nouns. In the subcategory of grammatical errors, there were four errors related to the use of countable and uncountable nouns, four errors in pronoun reference, two errors in article use, and four errors in the choice of prepositions. Subject-verb agreement, tense usage, and other word order were all correct. There were 25 word-choice errors and 17 awkward words, phrases, and clauses identified. There was an omission error under the content category. In relation to the vocabulary category of the three criteria, it was shown that Papago translations had the highest error rate overall.

Table 9. The Results of Sub-Category Errors in Papago Translations

Error Categories Number/Percentage	Sub-Categories	Frequency
Grammar	Use of Countable and Uncountable Nouns	4 (28.6%)
	Pronoun Usage	4 (28.6%)
	Article Usage	2 (14.3%)
	Subject-Verb Agreement	0 (0%)
	Tense Usage	0 (0%)
	Preposition Usage	4 (28.6%)
	Other Word Order and Sentence Structure Problems	0 (0%)
Vocabulary	Word Choice (poor synonym choice)	25(61.0%)
	Awkward Word, Phrases and Clauses	17 (39.0%)
Content	Omission	1 (100%)
	Extraneous Additions	0 (0%)

Each category is further broken down to show more detailed insight into the type of error. This section presents examples of grammatical, vocabulary, and content errors found when Bong's words were translated using Google Translate and Papago Translate. Table 10 shows examples of various types of grammatical errors in Google Translate and Naver Papago. In sentence 1, Google translated it as “In the case of parasites,” no doubt invoking the title of a movie. However, it should be translated as a singular noun rather than a plural noun. It should instead be phrased as “In the Case of Parasite”. Syntax 2 contains a pronoun usage error, committed by Papago translation. Papago means “please tell me about it”. It is translated as “please tell him about it” because ‘me’ is a pronoun here. The error in sentence number 3 deals with article usage. In this case, it is translated by Papago translation as “a very strong water,” but since water is an uncountable noun, articles should not be used. Additionally, director Bong used the Korean word “드러운”, which is a dialect of “dirty,” and the machine translator translated dirty as “strong”.

Table 10. Examples of Grammar Errors in MT

Bong's Remarks	<ol style="list-style-type: none"> 음.. 기생충 같은 경우는 인제..소파위에서 어떤 부부들의 어떤 부부의 어떤 일상적인 순간 지금 다시 만나면 그 얘기하고 싶은데 누구 스파이크 리 아는 분 있으면 그 얘기 좀 전해주세요. 그런데 뭐 보기에는 되게 드러운 물처럼 보이지만 배우들을 위해서 되게 깨끗한 물을 머드팩 재료를 써서 했어요. 처음 시나리오를 쓸 때부터 부자집의 구조에 대한 기본적인 아이디어가 제가 있었구요. 인물들의 동선 같은 게 중요해서 그 디자인을 많이 요구했었죠 그렇게 해달라고 미술감독님한테. 극장이 사실 뭐..큰 빅 스크린이나 여러 명이 모여서 보는 것도 중요하지만 사실 극장의 가장 핵심적인 점은 보는 사람이 스탑 버튼을 누를 수 없는 유일한 곳이라는 게 그게 핵심인 것 같아요.
Machine Translations	<ol style="list-style-type: none"> Ummm... In the case of parasites, a couple's everyday moments on the sofa, uh (Countable and uncountable noun error): Google Translation I'd like to talk about that when we meet again, if anyone knows Spike Lee, please tell me about it. (Pronoun usage error): Papago Translation It looks like a very strong water, but for the actors, I used mud pack ingredients to make clean water. (Article usage error): Papago Translation.

	<p>4. From the time I first wrote the screenplay, I had a basic idea of the structure of the rich house. The movement of the characters was important, so I asked for that design a lot. Ask the art director to do that. (Tense and pronoun usage error): Google Translation</p> <p>5. It's important to see a theater on a big big screen or a group of people, but I think the most important thing about a theater is that it's the only place where viewers can't press the stop button. (Preposition error): Google translation</p>
Proofreading	<p>1. Ummm... In the case of Parasite, a couple's everyday moments on the sofa, uh</p> <p>2. I'd like to talk about that when we meet again. If anyone knows Spike Lee, please tell him about it.</p> <p>3. It looks like very dirty water. But for the sake of the actors, I used mud pack ingredients to keep the water clean.</p> <p>4. From the time I first wrote the screenplay, I had a basic idea of the structure of the rich house. The movement of the characters was important, so I asked for many designs. I asked the art director to do that.</p> <p>5. It's important to see a movie on a big, big screen or with a group of people, but I think the most important thing about a theater is that it's the only place where viewers can't press the stop button.</p>

In syntax 4, Google translated the whole section of the conversation into statements. However, given the context, it is appropriate to use this sentence as declarative and in the past tense rather than imperative. Therefore, it is more natural to translate “Ask the art director” as, “I asked the art director”. The error in syntax 5 involves Google and deals with prepositions. In this syntax, it is appropriate to translate it as “with a group of people” thereby using the preposition ‘with’ for “a group of people” given the context.

Table 11 contains examples of machine translator lexical errors. Syntax 1 involves a vocabulary selection error, committed by Papago Translator's a vocabulary selection error. In this context, it is appropriate to use ‘have’ instead of ‘liked’. So, it should be worded as “have great taste” rather than “liked the taste”. Syntax 2 deals with two awkward translations provided by Papago. The first is the phrase interpreted as “his husband,” instead of ‘her husband’.

Table 11. Examples of Vocabulary Errors in MT

Bong's Remarks	<p>1. 그리고 스코트와 여러 산타바바라에 모든 관객분들 여러분들 정말 테이스트가 좋으신 것 같아요.</p> <p>2. 이제 그 지하실의 남자 어 박명훈이라는 배우인데 병커에 있는 그 남편 워낙 그 독특한 역할이고 그니까 정상과 비정상 사이를 왔다갔다하는 인물이라서</p>
Machine Translations	<p>1. And I think Scott and all the audience members in Santa Barbara really liked the taste. (Word choice error)</p> <p>2. He's an actor named Park Myung-hoon in the basement. His husband in the bunker has a unique role. He's moving back and forth between the top and the top. (Word choice and Awkward word, phrase and clause error)</p>
Proofreading	<p>1. And I think Scott and all the audience members in Santa Barbara really have great taste.</p> <p>2. He's an actor named Myung-hoon Park in the basement. The husband in the bunker has a unique role. He's moving back and forth between the normal and the abnormal.</p>

The second error is less awkward but equally wrong. As shown below, the phrase is translated as “between the top and the top”, which does not make sense. If director Bong's words were translated correctly, it would instead read “between the normal and abnormal”.

Table 12 contains examples of omissions and unnecessary addition errors that appear in machine translation. Director Bong's sentence "Nevertheless, I think only the theater has power" has been omitted. To retain the completeness of the idea, it must be included.

Table 12. Examples of Content Errors in MT

Bong's Remarks	스트리밍도 좋은점이 많고 또 넷플릭스에서 뭐..여러 가지 로마나 뭐 아이리쉬맨이나 메리지스토리 같은 훌륭한 작품들이 만들어지는 것은 되게 좋은 일인데 그럼에도 불구하고 어쩔 수 없이 극장만이 가지는 위력이 있는 것 같아요.
Machine Translations	There are a lot of good things about streaming, and it's a very good thing that Netflix makes great works such as Romance, Irishman, and Marriage Story. (Omission): Google translation
Proofreading	1. There are a lot of good things about streaming, and it's a very good thing that Netflix produces great works such as Romance, Irishman, and Marriage Story. But I think it's inevitable that the theater has the power.

5. Discussion and Conclusion

This study examined the differences between HI and MT when a total of 223 syntaxes of Korean interviews with director Bong Joon-ho were translated by Sharon Choi, Google Translate, and Papago. Sharon Choi's interpretation accuracy rate was remarkably high when comparing HI and MT. In addition, the accuracy rate of Google translation and Papago translation was found to be high in the syntax of word choices. This suggests that the translation accuracy of the two machine translators is almost the same. Furthermore, interpretation errors made by Choi, 11 (64.7%) were found to be errors in basic grammar, and five (29.4%) were found to be errors in vocabulary selection, one was found to be errors in content selection (5.9%). On the other hand, out of 58 Google translation errors, there were 13 (22.4%) errors in basic grammar and 44 (75.9%) errors in vocabulary selection. The Papago translation tool found errors 57 times, of which 14 (24.6%) were grammatical errors, 41 (71.9%) were lexical errors, and two (3.5%) were content errors. Overall, when it came to HI, grammar errors tended to appear more frequently than vocabulary selection errors, while in Google and Papago translations, vocabulary selection errors appeared more frequently than grammar errors. These kinds of errors may be attributable to characteristics of spoken language. In addition, content errors were rare in both human and machine translation with omission and addition, suggesting that all tended to stick to director Bong's original words. Only when the lexis utilized was deemed to be in error—in light of the variety of options available with regard to grammatical structures and the meaning of words or phrases—was it judged to be successful in generating the desired or intended result. Choi may have chosen to use synonyms and fewer words, for instance, to communicate director Bong's message, but this wouldn't be considered erroneous if it accurately captured the essence of his communication. Regarding error detection in this study, it should be highlighted that researchers had the benefit of time and useful grammar tools to consider and evaluate their translations and interpretations. Neither Choi nor AI systems had these advantages. In addition, content errors were rare in both human and machine translation in terms of errors involving omission and addition, suggesting that all tended to stick to director Bong's original words.

Since director Bong's remarks were delivered in real-time, human interpretation and machine translation of spoken language, as well as the use of Chatbots, would be an interesting point of study in the future. The findings imply that suitable word choices and grammar are more accurately determined by humans rather than by machine algorithms. The AI programs committed translation errors in word choices because they had difficulty recognizing

the subtle pauses, fragments, and run-on sentences that are commonly present in spoken language. From the researchers' point of view, there are some things we need to consider. In the case of Sharon Choi, it was simultaneous interpretation after listening to a speech, whereas, in the case of Google and Papago Translator, it was a case of translating written sentences. As she once mentioned on a famous Korean TV talk show, *You Quiz Under Block*, Sharon said, as a non-professional interpreter, she felt extremely nervous at the awards ceremony. In addition to such tension, she was in a situation where she had to actively use her linguistic wits and background knowledge of Director Bong. Moreover, she was in a situation where she had to faithfully interpret the contents even after hearing Bong's rather long sentences that required memory skills. Despite the difficulties of impromptu interpretation, there are advantages of impromptu interpretation over machine translation. Since the interpretation situation is shared with listeners/viewers, HI has an interesting advantage in that error tolerance can be evaluated higher than MT from the viewpoint that visual clues and on-site situations can be used to understand minute momentary mistakes and omissions.

In current times, MT has become a powerful learning tool for aiding in communication between different language speakers. Regrettably, it is not as widely accepted as it could or should be given people's view that its tendency for making translation errors still happens with much regularity. However, the capability of these AI tools is growing exponentially on a daily basis. Even during the development of this research study, the researchers noticed a significant evolution in the quality of Google Translator and Naver Papago. The AI capability of these applications produced better syntax, richer vocabulary, and content accuracy. This is believed to be because MTs frequently benefit from updates in their big data sources and are seeing more rapid development in their programming through AI learning. With the rapid development of AI technology and the recently introduced Chat GPT, MTs are expected to perform near-perfect interpretation of human conversations sooner or later. Still, considering the colloquial characteristics that human language always changes and uses a lot of omissions based on situations, it is thought that 100% reliable machine interpretation will take a little longer.

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Examples in: English

Applicable Languages: English

Applicable Level: All