

**COMPARING SEMANTIC RETENTION, PRAGMATIC
EQUIVALENCE, AND CULTURAL FIDELITY IN GROK
AI AND GEMINI AI BACK-TRANSLATIONS OF
NWOZUZU'S *NKE M JI KA***

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Abstract

The increasing use of Artificial Intelligence (AI) in translation has raised important questions about its ability to preserve meaning in culturally rich literary texts. This study examined the extent to which Grok AI and Google's Gemini AI preserve semantic meaning, pragmatic force and cultural fidelity across twenty selected excerpts from *Nke M Ji Ka* by G. I. Nwozuzu (2013). Adopting a qualitative descriptive design, the Igbo excerpts were translated into English by the researcher and subsequently back-translated into Igbo using both AI systems. The generated texts were compared with the original Igbo versions using Baker's (1992) Theory of Pragmatic Equivalence. The findings reveal that while both systems successfully preserved basic semantic meaning in direct literal contexts, they encountered considerable difficulties in maintaining pragmatic force and cultural fidelity in dialogues rich in cultural nuances. Figurative devices and indigenous cosmological frameworks proved particularly challenging, resulting in literal calques, phrasal verb intrusions, and anatomical impositions. Comparatively, Grok AI demonstrated stronger structural fidelity and lexical correspondence across the dataset, whereas Gemini AI exhibited significant lexical hallucinations and grammatical instability. The study concludes that although AI translation systems show significant potential for baseline Igbo translation, they remain structurally limited in preserving the deeper cultural, syntactic, and pragmatic dimensions of literary discourse. Expert human review therefore remains essential for ensuring the accurate translation and contextual preservation of culturally embedded texts.

Keywords: Artificial Intelligence in Translation, Back-translation, Pragmatic Equivalence, Cultural Fidelity

Introduction

The rapid advancement of Artificial Intelligence (AI) has transformed contemporary translation practices, leading to the widespread use of machine translation systems and large language models for multilingual communication. Recent AI-powered translation technologies have demonstrated significant improvements in fluency, coherence, and grammatical accuracy, making them increasingly useful in education, business, research, and literary translation. Despite these advances, concerns remain regarding their ability to preserve the cultural, contextual, and pragmatic meanings embedded in literary texts.

This concern is particularly relevant to Igbo literary discourse, where meaning is frequently conveyed through proverbs, ritual utterances, indigenous religious concepts, kinship expressions, and other culturally embedded forms of communication. Because such expressions derive much of their significance from shared cultural knowledge and context, their translation requires more than lexical equivalence. The evaluation of translation quality must therefore consider the preservation of semantic meaning, pragmatic force, and cultural significance.

Although recent studies have reported encouraging results regarding AI-assisted translation, research has focused predominantly on major world languages and widely studied language pairs. Comparatively little attention has been devoted to indigenous African literary texts, particularly those written in Igbo. Furthermore, limited empirical research has examined how contemporary AI systems handle culturally embedded meanings in literary discourse through back-translation.

Against this background, this study investigates the performance of Grok AI and Gemini AI in the back-translation of selected excerpts from *Nke M Ji Ka* (Nwozuzu, 2013). The drama was selected because of its rich use of culturally significant expressions that provide a suitable basis for evaluating the extent to which the two AI systems preserve semantic meaning, pragmatic force, cultural significance, and orthographic accuracy.

The original Igbo version of the drama was first translated into English. The resulting English text was subsequently submitted to both Grok AI and Gemini AI for back-translation into Igbo. The resulting back-translations were subsequently analysed for semantic retention, pragmatic equivalence, and cultural fidelity.

This study contributes to the ongoing discussions on AI-assisted translation and literary translation by providing evidence from an under-researched African language context. It further offers insights into the strengths and limitations of contemporary AI systems in handling culturally embedded literary discourse.

Conceptual Review

Artificial Intelligence (AI) in Translation

In translation studies, AI has become increasingly significant due to the development of machine translation systems and large language models capable of generating translations across multiple languages. These technologies employ computational techniques such as neural networks, deep learning, and natural language processing to analyze linguistic patterns and produce target-language texts.

Contemporary AI systems are capable of producing translations that are often fluent, coherent, and grammatically acceptable (Obeidat et al., 2024). As a result, AI-assisted translation has become widely adopted in academic, professional, and literary contexts. However, scholars have observed that linguistic fluency does not necessarily guarantee the preservation of contextual meaning, cultural significance, or communicative intention.

Back-Translation

Back-translation involves translating a translated text back into its original language in order to facilitate comparison with the source text. The technique is widely employed in translation studies, multilingual research, and crosscultural communication as a means of assessing translation quality and identifying discrepancies between source and target texts.

Traditionally, back-translation has been used as a verification mechanism for detecting semantic shifts, lexical distortions, omissions, and additions that

may occur during translation (Alkodimi et al., 2024). By comparing the backtranslated version with the original source text, researchers are able to identify areas where meaning has been altered, weakened, or lost. The procedure is particularly useful when the objective is to assess whether a translation has successfully preserved the intended message of the source text.

Pragmatic Equivalence

Pragmatic equivalence refers to the preservation of communicative intention, implied meaning, and contextual effect during translation. Unlike semantic equivalence, which focuses primarily on lexical meaning, pragmatic equivalence is concerned with the relationship between what is said and what is intended within a particular communicative context. The concept recognizes that meaning is often influenced by contextual factors, cultural assumptions, and shared background knowledge.

Baker (1992) explains pragmatic equivalence in terms of implicature and communicative intention, arguing that translators must account for meanings that are implied rather than explicitly stated. Successful translation therefore requires more than the transfer of words; it demands the preservation of contextual meaning and communicative function.

The concept is particularly relevant to literary discourse because literary texts frequently rely on indirect communication, figurative language, proverbs, and culturally conditioned expressions. In such cases, literal translation may preserve lexical meaning while failing to convey the intended communicative effect. Consequently, pragmatic equivalence provides an important basis for evaluating the effectiveness of AI-generated translations.

Cultural Fidelity

Literary texts often contain culture-bound expressions whose meanings derive from specific social and cultural environments. Such expressions may include proverbs, ritual language, indigenous religious concepts, kinship terms, and culturally specific metaphors. In this study, cultural fidelity refers to the extent to which a translation preserves the cultural meanings, values, beliefs, practices, and worldview embedded in the source text. Oji (2023) argues that many Igbo cultural expressions resist direct translation because they are

rooted in indigenous experiences and cultural practices that may not have exact equivalents in other languages.

Empirical Literature Review

Research on translation has consistently emphasized that successful translation involves more than the transfer of lexical meaning. Scholars increasingly argue that the preservation of communicative intention, cultural knowledge, and contextual significance are essential for achieving meaningful equivalence between source and target texts. This concern becomes particularly important in literary translation, where meaning is frequently conveyed through culturally embedded expressions, figurative language, and context-dependent forms of communication. Consequently, a growing body of scholarship has examined the relationship between language, culture, pragmatics, and translation quality from various perspectives.

Within the Igbo context, studies have demonstrated the central role of culture and pragmatics in meaning construction. Dozie (2020), in his examination of speech acts in Igbo discourse, argues that communication among the Igbo is strongly influenced by communal values, social relationships, and culturally shared expectations. The study reveals that the interpretation of many utterances depends not merely on their linguistic forms but also on the sociocultural contexts in which they occur. This finding underscores the importance of contextual meaning in Igbo communication. Similarly, Ngele et al. (2018), investigating the translation of Igbo proverbs in Achebe's *Things Fall Apart* into English and French, demonstrate that the meanings of proverbs are often shaped by both semantic and pragmatic considerations. The authors observe that literal translation frequently fails to convey the intended communicative force of proverbial expressions because much of their meaning derives from shared cultural knowledge. More recently, Ik-Iloanusi and Mbagwu (2026) examined the communicative features of proverbs used during traditional Igbo events and found that proverbs perform important sociopragmatic functions, including advising, cautioning, persuading, and reinforcing communal values. The study further reveals that the meanings of proverbs emerge from the interaction between language, culture, and context rather than from lexical content alone. Collectively, these studies highlight the significance of context, culture, and pragmatics in Igbo discourse. However,

they do not investigate the ability of AI translation systems to preserve such meanings in literary translation.

The preservation of cultural meaning has also attracted considerable attention among scholars of translation. Eke's (2022) study on the representation of African cultural knowledge in translated literary texts demonstrates that translation functions as a medium through which cultural values, indigenous knowledge systems, and collective identities are transmitted across languages. The study further suggests that cultural meanings may be altered, weakened, or reinterpreted during translation. Similarly, Oji (2023) examines the translation of Igbo cultural expressions and argues that many culture-bound concepts resist direct translation because they are rooted in indigenous experiences and sociocultural realities. Consequently, translators often employ adaptive and explanatory strategies to preserve meaning. Relatedly, Anigbogu and Ahizih (2016) observe that literary language serves as an important vehicle for expressing indigenous worldviews and cultural realities, while Inyima (2018) emphasizes the role of literary discourse in the construction and representation of identity. Taken together, these studies demonstrate that cultural meaning occupies a central position in literary translation. Nevertheless, they focus primarily on human translation practices and do not evaluate the capacity of AI systems to preserve culturally embedded meanings in African literary texts.

The question of pragmatic meaning has become increasingly prominent in contemporary translation scholarship. Paronyan (2024) argues that literary translation should seek to preserve the communicative intention and functional effect of the source text rather than merely reproducing its linguistic structure. According to the study, equivalence extends beyond lexical correspondence to include contextual meaning and communicative purpose. A similar position is advanced by Jepri (2025), who maintains that faithful translation requires sensitivity to communicative function, audience interpretation, and contextual relevance. Likewise, Sarimi, Pasopati, Jelita, Siadari, Agil, and Firzatullah (2025) demonstrate that meaning frequently extends beyond the literal wording of a text and depends significantly on contextual interpretation. These studies collectively reinforce the importance of pragmatic considerations in translation assessment. However, they do not specifically examine the

preservation of pragmatic meaning in AI-assisted translation involving culturally rich African literary discourse.

In addition to studies on pragmatics and culture, scholars have increasingly explored back-translation as a means of evaluating translation quality and meaning preservation. Alkodimi et al. (2024) investigated the impact of AI-assisted translation and back-translation on literary texts and found that participants who employed AI tools produced more effective translations and back-translations than those who relied solely on conventional methods. The authors further argue that back-translation serves as a useful mechanism for identifying translation errors, assessing translation quality, and revealing cultural nuances that may be obscured during the translation process. Similarly, Li and Tian (2025), in their study of the back-translation of Lin Yutang's *Moment in Peking*, demonstrate that back-translation provides a valuable means of examining how cultural meanings are preserved, transformed, or restored across languages. The study reveals that translators often employ multiple strategies to recover culture-specific meanings that may have been modified during translation. Beyond literary translation, Kimera et al. (2024) explored the application of back-translation in English-Luganda machine translation and found that the technique significantly improved translation quality in a low-resource language setting. Their findings further confirm the usefulness of back-translation as a tool for evaluating meaning preservation and translation performance. While these studies demonstrate the importance of back-translation in translation evaluation, they do not examine AI-assisted back-translation involving Igbo literary discourse.

Recent developments in Artificial Intelligence have generated substantial interest in the performance of machine translation systems and large language models. Obeidat et al. (2024), in a comparative study of Gemini, ChatGPT, and Google Translate, found that AI systems continue to encounter difficulties when translating idiomatic and figurative expressions despite achieving high levels of grammatical accuracy. The study reveals that non-literal language remains a significant challenge for automated translation. Similar concerns are raised by Santiáñez and Pastor (2025), whose comparative evaluation of machine translation systems and large language models show that literary phraseology remains particularly difficult to translate because it often depends on creativity, context, and cultural interpretation. Likewise, Ostadi and

Heidari Tabrizi (2025) report that AI-generated literary translations frequently preserve semantic content while exhibiting weaknesses in the treatment of culture-specific references and stylistic nuances. Al Maaytah (2026) further observes that high levels of linguistic accuracy do not necessarily result in cultural fidelity, particularly when translations involve context-dependent and culturally embedded meanings. Collectively, these studies indicate that although AI translation technologies have advanced considerably, significant challenges remain in the preservation of pragmatic meaning and cultural significance.

A synthesis of the reviewed literature reveals several important observations. First, scholars consistently acknowledge that successful translation requires the preservation of semantic meaning, communicative intention, and cultural significance. Second, studies on Igbo discourse demonstrate that meaning is frequently shaped by contextual and sociocultural factors rather than by lexical content alone. Third, research on AI translation suggests that figurative language, literary phraseology, and culture-bound expressions continue to present difficulties for contemporary translation systems. Finally, studies on back-translation highlight its effectiveness as a tool for evaluating meaning preservation and translation quality. Despite these contributions, no study has specifically examined the performance of Grok AI and Gemini AI in the backtranslation of an Igbo literary text. Furthermore, limited attention has been devoted to the preservation of pragmatic meanings, indigenous religious concepts, ritual discourse, kinship expressions, and other culture-bound elements in AI-assisted translation involving African languages. It is this gap that the present study seeks to address by comparatively evaluating the ability of Grok AI and Gemini AI to preserve semantic meaning, pragmatic force, and cultural fidelity in selected excerpts from G. I. Nwozuzu's *Nke M Ji Ka* (Nwozuzu, 2013) through a back-translation approach.

Theoretical Framework

Baker's Concept of Pragmatic Equivalence

According to Baker (1992), pragmatic equivalence involves the preservation of implied meanings, communicative intentions, and contextual effects in translation. Baker's concept of pragmatic equivalence is particularly relevant to this study because the selected excerpts from *Nke M Ji Ka* contain proverbs,

ritual utterances, indigenous religious concepts, kinship expressions, and other culturally embedded forms of discourse whose meanings extend beyond literal interpretation. The framework provides an appropriate basis for evaluating the extent to which Grok AI and Gemini AI preserve communicative intention and contextual meaning in their back-translations. While the study is anchored on pragmatic equivalence, cultural fidelity and orthographic accuracy are employed as complementary analytical criteria to assess the preservation of culture-bound meanings and adherence to Standard Igbo orthographic conventions.

Methodology Research Design

This study adopts a qualitative descriptive research design. The design is considered appropriate because the study focuses on the analysis and interpretation of meanings contained in translated texts rather than on numerical measurement. The study evaluates the extent to which Grok AI and Gemini AI preserve semantic meaning, pragmatic force, and cultural fidelity in the back-translation of selected excerpts from *Nke M Ji Ka* (Nwozuzu, 2013).

Source of Data

The data for the study were drawn from selected excerpts of *Nke M Ji Ka* (Nwozuzu, 2013). The excerpts were purposively selected because they contain proverbs, ritual utterances, indigenous religious references, kinship expressions, and other culture-bound elements capable of posing translation challenges.

Data Collection Procedure

The original excerpts were first translated into English by the researcher. The English translations were subsequently submitted separately to Grok AI and Gemini AI for back-translation into Igbo. To facilitate context-sensitive translation, each excerpt was presented to Grok AI and Gemini AI together with relevant contextual information from the drama, including details of the speaker, addressee, situational setting, and communicative intent where necessary. The translations produced by Grok AI and Gemini AI constituted the primary data for comparative analysis.

Method of Data Analysis

Data were analysed qualitatively using Baker's (1992) concept of Pragmatic Equivalence as the theoretical framework. The AI-generated back-translations were compared with the original Igbo text to determine the extent to which semantic meaning, pragmatic intention, and cultural significance were preserved. Particular attention was paid to the translation of proverbs, ritual discourse, indigenous religious concepts, kinship expression, and other culturally embedded elements.

Data Presentation and Analysis

The selected excerpts are analysed comparatively by examining the original Igbo text, the researcher's English translation, and the Igbo back-translations generated by Grok AI and Gemini AI. The analysis focuses on three major dimensions: semantic meaning, pragmatic equivalence, and cultural fidelity. Semantic meaning is assessed by examining the extent to which the AI systems preserve the denotative content of the source text. Pragmatic equivalence is evaluated by determining whether the communicative intention, contextual meaning, and speech function of the original utterance are retained in the back-translated versions. Cultural fidelity is assessed by examining the extent to which culture-bound concepts, indigenous beliefs, ritual expressions, proverbs, kinship terms, and other culturally embedded meanings are preserved. Particular attention is also paid to instances of omission, addition, substitution, semantic distortion, cultural loss, and orthographic deviations where they occur.

CASE 1 Act 1, Scene 1 pp.8 Speaker: Eze Dialogue

Igbo: Ebe m maara nke ọma na nke m ketere n'ụwa a m lọrọ bụ naanị nke m riri n'ọnụ.

Researcher's Translation (English Version): Since I already know that my portion in this world is only what I have eaten in my mouth.

Grok AI Back-Translation (Igbo): Ebe m ma na òkè m n'ụwa bụ naanị ihe m tinyere n'ọnụ m rie.

Gemini AI Back-Translation (Igbo): Ma m sị na m maralarị na oke m n'ụwa a bụ sọsọ ihe m tinyere n'ọnụ m.

Both AI systems retained the central meaning of the original expression. However, Grok replaced *riri n'onu* with *tinyere n'onu m rie* (“put in my mouth and eat”), thereby altering the original lexical structure. Gemini introduced an unrecognized form *maralarị* and the dialectal item *sọsọ* in place of the standard expression used in the source text. While these deviations do not substantially affect the semantic meaning, they reduce linguistic fidelity to the original dialogue. Overall, both systems preserve the message, but Grok demonstrates greater correspondence with the source text.

CASE 2 Act 1, Scene 1 pp.9 Speaker: Ugochi Dialogue

Igbo: Beluso chi taa agaghị efo m jekwuru ndị a butere chi ọhuru mara nke ha ji.

Researcher's Translation (English Version): Unless morning will not come today, I will go and meet those people who brought a new god to find out what they have got.

Grok AI Back-Translation (Igbo): Ụbọchị na-apụtaghị echi, m ga-eje hụ ndị ahụ wetara chi ọhuru ka m mara ihe ha nwere.

Gemini AI Back-Translation (Igbo): A sị na ọwụwa anyanwụ agaghị adi, m gofere gaa hụ ndị ahụ wetara chi ọhuru ka m mara ihe ha ji.

Neither of the AI system successfully reconstructed the hyperbole. Grok rendered it as *Ụbọchị na-apụtaghị echi* (“the day does not appear tomorrow”), which changes both the temporal reference and structure of the source expression. Gemini performed worse by translating “morning” as *ọwụwa anyanwụ* (“east”), thereby confusing a temporal phenomenon with a geographical direction. In addition, Gemini's use of *gofere* introduces a nonstandard lexical item into the sentence. Although both systems retained *chi ọhuru*, they neither recovered its contextual significance as a reference to Christianity. Consequently, both outputs exhibit semantic and cultural loss, with Grok showing relatively better retention of the original meaning.

CASE 3 Act 1, Scene 2 pp.12 Speaker: Ibe Dialogue

Igbo: Ọ bụrụ na nwaanyị a anyị nuru maka ya ugbo a bidoro jekwuwe dibia maobu arusi, ikekwe ọ garaghị amuta nwa nwoke ahụ ọ choro.

Researcher's Translation (English Version): Assuming this woman we discussed now had gone to a native doctor or a deity perhaps, she might not have had that male child which she desired.

Grok AI Back-Translation (Igbo): Ọ bụrụ na nwanyị a anyị na-ekwu maka ya ugbo a gara n'ogugụ ma ọ bụ n'ámụsị, ọ ga-abụ na ọ gaghị amụ nwa nwoke ọ chọrọ.

Gemini AI Back-Translation (Igbo): A sị na nwanyị a anyị nūrụ gbasara ya taa jere na nke dibịa afọ ma ọ bụ arụsị, maọbụ na ọ gaghị amụ nwa nwoke ahụ ọ chọrọ

Both AI systems failed to preserve key cultural terms in the original dialogue.

Grok mistranslated *dibịa* as *ogugụ* (“numbering”) and replaced *arụsị* with *ámụ sị*, a dialectal form referring to a witch rather than a deity. Gemini retained *arụsị* but altered *dibịa* to *dibịa afọ* (“stomach healer”), which changes the intended meaning. These substitutions distort the religious concepts represented in the original text and weaken the contrast between traditional spiritual consultation and divine intervention. As a result, both semantic meaning and cultural fidelity are significantly compromised.

CASE 4 Act 1, Scene 2 pp.13 Speaker: Chike Dialogue

Igbo: Ọ bụrụ na nke a bụ ihe kpatara o ji maka ya bịa, ị mara na agwọ nọ n'akịrịka.

Researcher's Translation (English Version): If this is the reason why she came, know then that there is fire on the mountain.

Grok AI Back-Translation (Igbo): Ọ bụrụ na ọ bụ ihe a mere o ji bịa, mara na ọkụ dị n'ugwu.

Gemini AI Back-Translation (Igbo): Ọ bụrụ na ọ bụ nke a kpatara o ji bịa, mara na ihe n'emebi na mberede.

Both systems failed to recover the native metaphor of the snake on the thatch (*agwọ nọ n'akịrịka*). Instead, they focused on the researcher's English idiomatic shift "fire on the mountain" with distinct failures: Grok translated the Western idiom literally into *ọkụ dị n'ugwu* (fire is situated in the mountain). In native Igbo syntax, to denote a state of being ablaze, a speaker would say *ọkụ na-agba n'ugwu*. Grok's choice creates a stagnant, unnatural

sentence. Gemini attempted a free translation, trying to decode the contextual meaning of the idiom as a sudden disaster (*ihe... na mberede*). However, it introduced a glaring error by writing *n'emebi* instead of the correct progressive verb marker form *na-emebi*.

CASE 5 Act 1, Scene 3 pp.17 Speaker: Eze Dialogue

Igbo: Ụkwụ na-aga wam wam marakwa na anya na-aga wara wara wara naahụ ya.

Researcher's Translation (English Version): It takes a thief to catch a thief.

Grok AI Back-Translation (Igbo): Onye ohi na-achụ onye ohi

Gemini AI Back-Translation (Igbo): Ọ bụ onye dinta na-anya ọkụ na-esọ ụkwụ mgbada.

By processing the English proverb literally rather than locating its deep functional equivalent, both machines completely erased the original ideophones (*wam wam* and *wara wara wara*): Grok produced a literal translation of the English version to create *Onye ohi na-achụ onye ohi* (A thief is chasing a thief). While it captures an element of tracking, it misses the rhetorical balance of a swift leg being watched by a sharp eye. Gemini fabricated a completely unrelated, non-proverbial scene involving a hunter warming himself by a fire while tracking an antelope (*Ọ bụ onye dinta na-anya ọkụ...*) This strips the text of its structural symmetry.

CASE 6 Act 1, Scene 3 pp.17 Speaker: Eze Dialogue

Igbo: Ebe okwugburu onwe ya nọ, mara na omegburu onwe ya nọ ya.

Researcher's Translation (English Version): Wherever a talkative is, just know that a hyperactive person is there.

Grok AI Back-Translation (Igbo): Ebe onye na-ekwu okwu nọ, onye na-eme ihe na-adịkarị.

Gemini AI Back-Translation (Igbo): Ebe ọ bụla asa nọ, asịrị nọ ya.

The original text plays on the morphological balance between *okwugburu onwe ya* (talkative) and *omegburu onwe ya* (hyperactive person). Grok flattened the dramatic language into a plain Igbo prose: *onye na-ekwu okwu* (a person who speaks) and *onye na-eme ihe* (a person who does things). This

removes all the proverbial urgency and comedic exaggeration from Eze's dialogue. Gemini introduced a modern street slang, also a homonym, *asa* (which can mean a beautiful woman or a fish), linking it to *asiri* (gossip). This is a severe contextual violation.

CASE 7 Act 1, Scene 3 pp.19 Speaker: Eze Dialogue

Igbo: Afa ejirila aka ya ya gbaa onwe ya. Arụ!

Researcher's Translation (English Version): Of its own accord, divination has revealed this. Abomination!

Grok AI Back-Translation (Igbo): O bu onwe ya ka afa kowara ya. Alu!

Gemini AI Back-Translation (Igbo): Nkowa akowaala onwe ya, Alusi/Nso ala!

Grok retains the culturally significant term *afa* (divination), thereby preserving an important aspect of the original message. However, it mistranslates *ejirila aka ya gbaa onwe ya* as *afa kowara ya* ("divination explained it"), weakening the metaphorical force of the expression. Gemini performs considerably worse by replacing *afa* with *nkowa* ("explanation"), thereby eliminating the divinatory concept central to the utterance. Although Gemini offers *Nso ala* as an equivalent of *Arụ*, it simultaneously introduces *Alusi* ("deity"), which does not occur in the source text. Consequently, Grok demonstrates stronger cultural retention, whereas Gemini substantially reduces the indigenous religious content embedded in the original expression.

CASE 8 Act 1, Scene 3 pp.20 Speaker: Eze Dialogue

Igbo: Adanne m, ewu ataala m igu n'isi! Ugwu m aruola!

Researcher's Translation (English Version): My sister, I have been dragged to the mud! My dignity has been debased!

Grok AI Back-Translation (Igbo): Nwanne m nwanyị, a doro m n'uru! A kporo m ugwu m n'ala!

Gemini AI Back-Translation (Igbo): Nwanne m nwaanyị, a roworo m n'aja! Ugwu m a laala n'iyi!

Both AI engines defaulted in generating the functional equivalence of the proverb. The English kinship address "My sister" (*Nwanne m nwanyị*)

replaced the specific cultural designation *Adanne* (mother's first daughter), demonstrating a lack of cultural context tracking. Respectively, Grok generated *a dọrọ m n'urọ* (which is flawed; standard syntax requires *a dọbara m* or *a dọrọ m dọba*). Furthermore, it mistranslated "debased/brought down" as *a kpọrọ m* (I called), resulting in the nonsensical statement: "I called my dignity to the ground." Gemini generated the ungrammatical word *a rọworo m*. It then translated "mud" to *ájá* (sand/soil), altering the tactile imagery of being soiled in the mud. Generating "a laala" instead of "alaala") to represent the loss of dignity is grammatically incorrect.

CASE 9 Act 1, Scene 3 pp.21 Speaker: Ọgọoma Dialogue

Igbo: Ana m achọ ime ka ị mara na ụlọ agaghị adawa hapụ uko.

Researcher's Translation (English Version): I want you to know that when the head is cut off, the body falls.

Grok AI Back-Translation (Igbo): Onye isi egbuo, ahụ adaa.

Gemini AI Back-Translation (Igbo): A kwatuo isi, ahụ adaa.

The researcher chose an English metaphor centered on the human body ("head" and "body") to replace the original architectural metaphor of the house and kitchen rack (*ụlọ* and *uko*). Grok translated "when the head is cut off" to *Onye isi egbuo*, which reads as "the leader kills" rather than "when the head is severed." It completely misunderstood the passive/impersonal voice of the English clause. Gemini used *A kwatuo isi*, which translates to "if the head is pushed down or toppled." While structurally superior to Grok, it shifts the violent finality of being "cut off" to a lesser physical action, losing a portion of the original dramatic stakes. Although neither of the AI systems generated the functional equivalent Igbo version of the researcher's English version.

CASE 10 Act 1, Scene 3 pp.22 Speaker: Ọgọoma Dialogue

Igbo: Lee anya Onyekwere ka m gwa gị 'e-e' abughị eziokwu, 'mba' ka ya mma.

Researcher's Translation (English Version): Look Onyekwere let me tell you, a no is better than a yes that is a lie.

Grok AI Back-Translation (Igbo): Lee Onyekwere, ka m gwa gị, mba ka mma karịa ehihie nke bụ ụgha.

Gemini AI Back-Translation (Igbo): Lee Onyekwere ka m gwa gi, 'mba' ka 'ee' nke bụ okwu ụgha mma.

This case reveals a clear difference in performance between the two AI systems. Grok mistranslates *ee* (“yes”) as *ehihie* (“afternoon”), producing the erroneous statement that “a no is better than an afternoon that is false.” This lexical substitution completely alters the intended meaning. Gemini, by contrast, accurately reconstructs the opposition between *mba* (“no”) and *ee* (“yes”), thereby preserving both the semantic meaning and pragmatic force of the original utterance. Since the proverb expresses a moral preference for honesty over dishonesty, Gemini's rendering successfully maintains the communicative intention, whereas Grok fails to do so. Gemini therefore performs significantly better in this case.

CASE 11 Act 1, Scene 3 pp.22 Speaker: Ogooma Dialogue

Igbo: A na-agwọ onye ibi ọ na-eto afo, a mara na ya na ajọ ọhịa akaala agba.

Researcher's Translation (English Version): When treatment is being given to a man with an enlarged scrotum yet his tummy protrudes, it becomes obvious he has an appointment with the evil forest.

Grok AI Back-Translation (Igbo): Mgbe a na-agwọ nwoke nwere nnukwu akpa amụ mana afo ya na-ama, ọ na-apụta ìhè na o nwere ọkụ n'ọhịa ojọọ.

Gemini AI Back-Translation (Igbo): Mgbe a na-agwọ nwaanyi/nwoke akpa amụ na-aza aza m'ọbụ na afo ya na-eto, mara na ọ nwere oge ọ ga-eje n'ajọ ọhịa.

Both AI systems preserve the general idea that a person's condition has deteriorated despite treatment. However, Grok introduces several semantic distortions. It translates *na-eto afo* as *afo ya na-ama*, where *ama* means "know" rather than "swell," thereby altering the intended meaning. It also renders *akaala agba* as *ọ nwere ọkụ n'ọhịa ojọọ* ("he has fire in the evil forest"), confusing *oku* ("call/appointment") with *ọkụ* ("fire"). Gemini performs better by preserving the notion of a future encounter with *ajọ ọhịa*, although it introduces grammatical inconsistencies such as *m'ọbụ* instead of *ma ọ bụ* and unnecessarily expands the original statement. While both systems retain the cultural concept of *ajọ ọhịa* (evil forest), Gemini achieves stronger semantic and pragmatic equivalence.

CASE 12 Act 1, Scene 3 pp.24 Speaker: Eze Dialogue

Igbo: Mụ onwe m abughị eze nke ga-abụ ọ gbupuchaa asụ n'ala ọ kpurukwa ya rachaa.

Researcher's Translation (English Version): I myself am not a king who goes back to lick his spittle.

Grok AI Back-Translation (Igbo): Abụ m eze nke na-alaghachi na-anụ asọ ya.

Gemini AI Back-Translation (Igbo): Mụ onwe m abughị eze na-agaghachi azụ ịla asomụ o gburu n'ala

Grok omits a substantial portion of the imagery and reduces the expression to *Abụ m eze nke na-alaghachi na-anụ asọ ya* ("I am a king who goes back drinking his saliva"), thereby losing the emphatic negation contained in the original utterance. Additionally, *na-anụ* is grammatically incorrect in this context. Gemini preserves the negative structure more successfully but introduces the dialectal form *ịla*. The lexical item *asomụ* was used instead of *asụ/asọ*. It also renders *ọ gbupuchaa* inaccurately as *o gburu* (he kills). Although both systems retain the core idea of retracting one's words or actions, the imagery is weakened. Gemini demonstrates slightly better semantic retention because it preserves the speaker's rejection of such behaviour.

CASE 13 Act 1, Scene 4 pp.28 Speaker: Eze Dialogue

Igbo: O-ji-anyahụ-mmụọ-, nnọọ.

Researcher's Translation (English Version): Seer-of -Spirits, welcome.

Grok AI Back-Translation (Igbo): Onye na-ahụ mmụọ n'anya, nnọọ.

Gemini AI Back-Translation (Igbo): Onye-na-ahụ-mmụọ-n'anya, nnoo.

This case displays an identical, significant semantic failure across both AI models. Both systems back-translated the phrase as *Onye na-ahụ mmụọ n'anya* (He who loves spirits / a lover of spirits). This error reverses a sacred title for a seer into a bizarre, contextually invalid statement that completely alters the tone of Eze's welcome.

CASE 14 Act 1, Scene 4 Pp. 29 Speaker: Eze Dialogue

Igbo: A gbakata izu, onye ntị ike anụ ya.

Researcher's Translation (English Version): Too many secret conclaves make the deaf hear.

Grok AI Back-Translation (Igbo): Ọtụtụ nzụkọ nzuzo na-eme ka onye ntị chiri nụ ihe

Gemini AI Back-Translation (Igbo): Izu karia, ọ dọrọ ghaa n'ezie.

Grok successfully translated the core meaning using direct, non-proverbial language (*ọtụtụ nzụkọ nzuzo* for secret conclaves, and *onye ntị chiri* for the deaf). While grammatically correct, it lacks the condensed, rhythmic structure of traditional Igbo oratory (*A gbakata izu...*). Gemini started well with *Izu karia* (When conclaves exceed limits), but collapsed entirely in the second half of the sentence, generating *ọ dọrọ ghaa n'ezie* which is a string of words with no semantic meaning in standard Igbo.

CASE 15 Act 1, Scene 4 pp.32 Speaker: Ufere Dialogue

Igbo: Burunu bugara ala, rịọ ya ka o huo aka n'obi n'ebe lọlọ eze nọ.

Researcher's Translation (English Version): Take it to Earth, and entreat her to withdraw her wrath from the queen.

Grok AI Back-Translation (Igbo): Buga ya n'ala, rịọ ya ka o wepụ iwe ya n'isi eze nwanyị.

Gemini AI Back-Translation (Igbo): Wereduo ya n'ala, rịọọ ya ka ọ kpọrọ iwe ya pụọ n'ahụ nwaanyị eze.

Both engines failed to recognize that "Earth" as a proper noun refers to the deity *Ala*, treating it instead as standard soil/ground (*ala* lowercase). Grok produced a clean, readable literal sentence. By using *wepụ iwe ya* (remove her anger), it followed correct abstract noun collocational rules in Igbo. Gemini failed on multiple levels. It introduced the non-existent word *Wereduo* and misspelled the imperative verb form *rịọ* as *rịọọ*. Crucially, it committed a severe semantic selection error by using the verb *kpọrọ* (used strictly for animate objects/humans, e.g., *kpọrọ nwa gị*) to refer to an abstract emotion

(*iwe* / anger). The additions ‘n’isi’ by Grok and ‘n’ahụ’ by Gemini demonstrate how Large Language Models (LLMs) often impose unnecessary physical anatomy in Igbo translation.

CASE 16 Act 1, Scene 4 pp.32-33 Speaker: Ufere Dialogue

Igbo: Leenụ *odo* anyị jì bia ikpe ụdọ. (Ọ tụtere *odo* ghasa n’ala, gbasakwa n’ọfọ ya.) Ala anyị, lee *odo*, wetere anyị ụdọ. Nke a bụ *nchara*, ihe chara achaa ka anyị na-arịọ-ọ. Biko arụ a nwanyị a mere ma ọ jì ụkwụ gata ma ọ jì ọnụ kwute maọbụ anya ka o jì lete, anyị na-akpuchapụ ya n’abalị a-o!

Researcher's Translation (English Version): see the *odo* we have brought to seek peace. (He breaks out a little *odo* and pours it on the floor and also on his *ọfọ*) Our land, see *odo*, bring us peace. This one is *nchara*, what is ripe and mature is what we seek-o. Please this taboo that this woman committed, whether she used her legs to come across it or she used her mouth to express it or used her eyes to see it, we are cleansing it this night-o!

Grok AI Back-Translation (Igbo): Lee *odo* anyị wetara ichọ udo. (Ọ naagbaji ntakiri *odo* wee wusa n’ala na n’ọfọ ya) Ala anyị, lee *odo*, weta anyị udo. Nke a bụ *nchara*, ihe chara acha ka anyị na-achọ-o. Biko alụ a nwanyị a mere, ma ọ bụ ụkwụ ya zutere ya, ma ọ bụ ọnụ ya kwuru ya, ma ọ bụ anya ya hụrụ ya, anyị na-asachapụ ya n’abalị a-o!

Gemini AI Back-Translation (Igbo): Hụ nzu/*odo* anyị wetara ichọ udo. (Ọ gbajiri ntakiri *odo* kpọsa n’ala, tinyekwa n’elu ọfọ ya) Ala anyị, hụ *odo*, weta udo. Nke a bụ *nchara*, ihe gachara agacha na nke gachara okenye ka anyị naachọ o. Biko alulụ a nwanyị a rurụ, ma ọ bụ na ọ kpọrọ ụkwụ hụ ya, ma ọ bụ na ọ jì ọnụ kwuo ya, ma ọ bụ jì anya hụ ya, anyị na-ekpochapụ ya n’abalị taa o!

Grok preserves important cultural items such as *odo*, *ọfọ*, *Ala*, and *nchara*. However, it introduces semantic distortions in several places. It replaces *akpuchapụ* ("ritually cleanse/remove") with *asachapụ* ("wash away"), thereby reducing a ritual purification act to ordinary washing. Similarly, *zutere* ("met/encountered") is used where the original implies coming into contact with taboo, resulting in a weakened ritual meaning. Furthermore, Grok changes *wetere anyị ụdọ* to *weta anyị udo*, altering the original structure of the supplication.

Gemini exhibits more serious deviations. It substitutes *odo* with *nzu/odo*, incorrectly treating the two ritual items as interchangeable. It mistranslates *aru* as *alulu*, introduces malformed constructions such as *gachara agacha* and *gachara okenye*, and replaces *akpuchapu* with *ekpochapu*, thereby weakening the ritual significance of purification. The omission of correct forms *o ji* and *ji* (*o ji* and *ji*) further reduces linguistic accuracy.

Although both systems preserve portions of the ritual discourse, they neither successfully reconstruct the cultural and religious force of the original text. Grok performs better because it retains more of the ritual vocabulary, whereas Gemini introduces multiple lexical and cultural distortions.

CASE 17 Act 1, Scene 4 pp.34 Speaker: Ufere Dialogue

Igbo: Eze, ihe niile m ga-ago, agochaala m ya, wazie oji a ka anyi taa.

Researcher's Translation (English Version): Eze, I have exhausted the words of prayer, now break the kolanut and let us eat.

Grok AI Back-Translation (Igbo): Eze, m agwuchaala okwu ekpere, ugbu a gbajie oji ka anyi rie.

Gemini AI Back-Translation (Igbo): Eze, m kpere ekpere m niile gachaa, ugbu a gbajie oji ka anyi gwa ya.

Both AI systems preserve the general meaning of the statement but fail to reproduce important cultural aspects associated with *oji* (kolanut). Grok translates *wazie oji a ka anyi taa* as *gbajie oji ka anyi rie*. Although *gbajie* means "break," it is not the culturally appropriate expression used in kolanut rituals, where *waa oji* is preferred. Similarly, *rie* ("eat") replaces *taa*, the culturally accepted verb associated with consuming kolanut.

Gemini performs less successfully. In addition to using *gbajie*, it renders the final clause as *ka anyi gwa ya* ("let us tell it"), which completely distorts the intended meaning. Consequently, the ritual and communal significance attached to kolanut consumption is lost.

Both systems preserve the surface meaning of the utterance, but neither accurately reconstructs the culturally appropriate expressions associated with kolanut rituals. Grok nevertheless demonstrates stronger semantic retention.

CASE 18 Act 2, Scene 1 pp.37 Speaker: Eche Dialogue

Igbo: Nne, biko agbakwana m ama.

Researcher's Translation (English Version): Mother, please do not betray me.

Grok AI Back-Translation (Igbo): Mama, biko erapula m.

Gemini AI Back-Translation (Igbo): Nne biko, agbala m ehi/arachila m n'ala.

Neither AI system successfully reconstructs the original expression. Grok translates it as *Mama, biko erapula m*, where *erapula* has no recognizable meaning in Standard Igbo. As a result, the central idea of betrayal is completely lost. Gemini performs even worse by producing *agbala m ehi/arachila m n'ala*, which contains unrecognized expressions *ehi* and *arachila*.

Pragmatically, the original utterance is a plea for loyalty and confidentiality. Both systems fail to preserve this communicative intention because the key lexical item *agbakwana m ama* is not recovered. Consequently, the semantic, pragmatic, and interpersonal force of the original statement disappears entirely in both translations. This case represents one of the clearest examples of translation failure in the dataset.

CASE 19 Act 2, Scene 1 pp.38 Speaker: Ugo Dialogue

Igbo: Aturu ya na ewu ga-asọ mpi ekwu kaakwa ya aka.

Researcher's Translation (English Version): Do not bring a knife to a gunfight.

Grok AI Back-Translation (Igbo): A kpọla mma n'ogu egbe.

Gemini AI Back-Translation (Igbo): Onye ji mma anaghi agatara onye ji egbe ogu.

The AI models focused on the researcher's English idiom. Grok translated the prompt as *A kpọla mma...* (A knife has been summoned/called to a gunfight). This improper verb selection attributes human agency to an inanimate object, creating an unnatural sentence structure. Gemini came closest to the functional meaning of the English phrase by stating that a person with a knife does not

go to fight a person with a gun. However, it faltered grammatically by using *agatara* incorrectly within that verbal structure, and completely stripped away the traditional proverbial tone of the original script.

CASE 20 Act 2, Scene 2 pp.43 Speaker: Ibe Dialogue

Igbo: Hapụkwanụ nke iyi mma, egbe maọbụ ụtà eche gi. Onye ike na ndị ike ibe ya ga-ahụ anyà taa.

Researcher's Translation (English Version): Forget about his waiting for you with a knife, gun or bow. A powerful man and fellow powerful men will meet today.

Grok AI Back-Translation (Igbo): Hapụ ya iche gi na mma, egbe ma ọ bụ ụtà. Onye ike na ndị ike ibe ya ga-ezute taa.

Gemini AI Back-Translation (Igbo): Hapụ zi okwu gbasara na ọ na-echere gi jiri mma, egbe ma ọ bụ ụtà. Dike na ibe ya ga-ezute taa.

Both AI systems preserve the general meaning of the statement. Grok translates *ga-ahụ anyà taa* as *ga-ezute taa* ("will meet today"), successfully conveying the intended meaning. However, it weakens the opening clause by rendering it as *Hapụ ya iche gi*, which is less emphatic than the original expression.

Gemini also retains the overall meaning but introduces the malformed expression *Hapụ zi okwu gbasara*. Additionally, it translates *onye ike* as *dike* ("warrior"), thereby narrowing the meaning of the original phrase. The source text refers broadly to a powerful person, whereas *dike* specifically denotes a hero or warrior.

Although both systems maintain the central message, Grok preserves the original meaning more accurately and avoids the lexical distortions present in Gemini's rendering. Grok therefore demonstrates stronger semantic fidelity in this case.

Discussion of Findings

Semantic Retention

Semantic retention across both large language models (LLMs) proved highly vulnerable to the structural interventions of the researcher's intermediate

English translations. When the intermediate text maintained a direct literal relationship with the Igbo concepts, the models achieved baseline semantic accuracy, as seen in Case 1 (*oke m n'ụwa*) and Case 10 where Gemini properly decoded the semantic opposition of *mba* (no) and *ee* (yes) to preserve the moral preference for honesty.

A prominent structural failure is observed in Case 13, where both Grok and Gemini fell victim to a phrasal intrusion. In back-translating the noun phrase "Seer-of-Spirits," the models over-associated the phrase with the common Igbo phrasal verb for affection, *ịhụ n'anya* ("to love"), flipping a sacred, vision-based title into a contextually absurd statement of affection (*Onye na-ahụ mmụọ n'anya*). Similarly, in Case 10, Grok mistranslated the word "yes" as *ehihie* ("afternoon"), producing an erroneous moral comparison, while in Case 11, it confused the nominal meaning of a call or appointment (*oku*) with *ọkụ* ("fire").

Furthermore, the introduction of passive or impersonal clauses in English led to direct grammatical failures in back-translation. In Case 9, Grok processed "when the head is cut off" as *Onye isi egbuo*, changing the meaning entirely to "the leader kills" and proving that the machine cannot dynamically map English passive structures back to the standard Igbo form. In Case 12, Grok completely omitted the emphatic negative clause of the source text, turning a rejection of hypocritical behavior into an active, erroneous affirmation (*Abụ m eze nke na-alaghachi...*).

Where the models did not completely alter the meaning, they engaged in severe semantic dilution. As demonstrated in Case 6, the dynamic morphological balance of *okwugburu onwe ya* (talkative) and *omegburu onwe ya* (hyperactive person) were flattened by Grok into ordinary prose (*onye na-ekwu okwu / onye na-eme ihe*), stripping the original dialogue of its descriptive urgency and comedic exaggeration. In Case 20, Gemini narrowed the broad conceptual scope of *onye ike* ("powerful man") to *dike* ("warrior/hero"), shifting a generalized description of power into a specific battlefield archetype.

Pragmatic and Cultural Challenges

The deepest layer of translation failure in this study occurred within the domains of pragmatic equivalence and cultural fidelity. Large Language

Models consistently prioritized surface-level Western vocabulary over indigenous cultural frameworks, cosmological structures, and ritual terminology.

A primary driver of this failure was calque-based literalism when responding to English idioms. In Case 4, instead of recovering the hidden, imminent danger implied by the traditional proverb *agwọ nọ n'akiriika* (a snake is on the thatch), both systems translated "fire on the mountain" literally. Grok generated the stagnant *ọkọ dī n'ugwu* (fire is situated in the mountain) rather than the active *ọkọ na-agba n'ugwu*, while Gemini treated it as a literal disaster (*ihe n'emebi na mberede*). This pattern is mirrored in Case 19, where neither system could bypass "bringing a knife to a gunfight" to locate the original agricultural proverb involving a sheep and a goat (*Aturu ya na ewu...*), with Grok's back-translation (*A kpọla mma n'ogụ egbe*) inappropriately attributing human agency to an inanimate object by stating that a knife had been "called" or "summoned" to a fight.

Socio-cultural tracking, figurative translation, and temporal awareness also collapsed in kinship, hyperbolic, and religious registers. In Case 2, neither system reconstructed the hyperbolic expression *Beluso chi taa agaghị efo*, with Grok altering the temporal reference to *Ubochi na-aputaghị echi* and Gemini confusing the temporal phenomenon with a geographic direction by translating "morning" as *owuwa anyanwu* (east), while both missed the contextual reference of *chi ohuru* to Christianity. In Case 8, both engines defaulted to the generic English kinship term "My sister" (*Nwanne m nwanyị*), failing to recover *Adanne* (mother's first daughter), a term carrying specific traditional legal and spiritual rights in Igbo family structures. In Case 3, both systems failed to preserve key religious constructs, as Grok mistranslated *dibia* as *ogugu* ("numbering") and replaced *arusi* with *amusị* (witch), while Gemini altered *dibia* to *dibia afo* ("stomach healer"). In Case 15, both models failed to recognize that "Earth" as a proper noun represents the deity *Ala*, rendering it as common soil (*ala* lowercase), which led both models to impose unnecessary physical anatomy onto the text, where Grok introduced *n'isi eze nwanyị* (on the queen's head) and Gemini introduced *n'ahu nwaanyị eze* (on the queen's body).

Finally, the systems proved incapable of navigating sacred ritual typography. In Case 16, Gemini treated the highly distinct spiritual materials *nzu* (native chalk) and *odo* (yellow camwood) as interchangeable by writing *nzu/odo*, while also weakening the purification verb *akpuchapu* to *ekpochapu*, a ritual flattening shared by Grok who substituted it with *asachapu* ("ordinary washing"). In Case 17, both models broke traditional protocol regarding the kolanut ritual, utilizing *gbajie* (to break/snap a stick) and *rie* (to eat food) or *gwa ya* (tell it) instead of the culturally mandatory verbs *waa oji* (to split the kolanut) and *taa oji* (to chew/consume kolanut). The ultimate pragmatic collapse occurred in Case 18, where the critical plea for confidentiality and loyalty (*agbakwana m ama*) was completely erased, as Grok produced a non-existent word (*erapula*) and Gemini hallucinated an unrecognizable phrase (*agbala m ehi/arachila m n'ala*), causing the entire interpersonal force of the dialogue to disappear.

Comparative Performance of Grok AI and Gemini AI

While both large language models demonstrated significant systemic limitations in deep cross-cultural translation, their operational failures stemmed from different linguistic behaviors, with Grok AI generally demonstrating superior structural fidelity and vocabulary retention over Gemini AI across the entire 20-case dataset.

Grok AI's primary strength lies in its relative consistency with standard vocabulary retention, even when its syntax became rigid. As seen in Case 7, Grok successfully retained the culturally core term *afa* (divination), whereas Gemini replaced it with *nkowa* (explanation). Similarly, in Case 16, Grok preserved the distinct ritual items *odo*, *ofọ*, *Ala*, and *nchara* without muddying the text, while showing stronger semantic accuracy and textual alignment in Case 1 and Case 20. Grok's main failures were structural; it frequently generated unpoetic, stagnant calques of Western idioms in Case 4 and Case 19, and occasionally committed severe lexical blunders, such as substituting the temporal marker *ee* (yes) with *ehihie* (afternoon) in Case 10.

Gemini AI, conversely, exhibited a high frequency of morphological, orthographic, and lexical hallucinations. It consistently introduced entirely non-existent, ungrammatical, or unrecognized words into the Igbo language, including *gofere* (Case 2), *maralarị* (Case 1), *wereduo* (Case 15), *a rọworo m*

(Case 8), and the nonsensical clauses *o doro ghaa n'ezie* (Case 14) and *agbala m ehi/arachila m n'ala* (Case 18). It also failed basic orthographic and grammatical structures in standard Igbo, notably; writing the ungrammatical progressive marker *n'emebi* instead of *na-emebi* (Case 4), using the dialectal form *soso* (Case 1), and using the split, ungrammatical past perfect form *a laala* instead of the unified bound marker *alaala* (Case 8), while additionally misspelling the imperative verb *ri* as *riro* (Case 15).

Furthermore, Gemini frequently violated semantic selection rules, such as using the animate verb *kporo* (to lead/bring a living thing) to describe the release of an abstract emotion anger (*iwe*) in Case 15. When attempting to escape literal translations, Gemini resorted to wild narrative inventions rather than cultural mapping, such as fabricating an entire scene about a hunter warming himself by a fire to translate an English proverb about a thief in Case 5.

Consequently, while Grok behaves as a rigid translator, prone to literal calques, Gemini functions as an unstable translator, prone to structural collapse, making Grok AI the more reliable tool for surface semantic preservation, though both systems remain inadequate for deep cultural back-translation.

Conclusion

This study evaluated the ability of Grok AI and Gemini AI to preserve the linguistic and cultural content of selected Igbo expressions from *Nke M Ji Ka* through a back-translation approach. The study found that both systems preserved basic semantic meaning more successfully than pragmatic and culturally embedded meanings. Grok AI demonstrated superior structural fidelity and vocabulary retention, keeping sacred ritual items intact despite producing rigid, literal calques. Conversely, Gemini AI exhibited severe morphological instability, generating non-existent lexical forms, violating semantic selection rules, and failing basic Standard Igbo verb-binding conventions. Overall, the study concludes that current AI translation models are heavily constrained by a reliance on surface-level textual probabilities, leaving them incapable of decoding deep syntactic constructions, figurative devices, and indigenous cosmological frameworks. Consequently, expert

human intervention remains indispensable to ensure the accurate preservation of meaning, cultural context, and communicative intent in literary translation

Recommendations

The findings of this study suggest the need for human involvement in the translation of culturally rich literary texts. While Grok AI and Gemini AI demonstrated the ability to preserve basic semantic meaning, both systems experienced considerable difficulty in maintaining the pragmatic force and cultural significance of several expressions. It is therefore recommended that AI-generated translations of Igbo literary texts be carefully reviewed by competent human translators, particularly where the texts contain proverbs, idioms, ritual discourse, and indigenous cultural concepts.

There is also a need for developers of AI translation systems to improve the representation of African languages in their training data. The incorporation of larger, culturally annotated Igbo corpora would enhance the systems' ability to recognise and accurately reproduce culture-bound expressions, traditional religious concepts, and other forms of indigenous knowledge that are often inadequately handled in machine translation.

Furthermore, attention should be given to improving the orthographic accuracy of AI-generated Igbo translations. The study identified several instances of spelling inconsistencies, incorrect lexical forms, and orthographic deviations that affected linguistic fidelity. Improving adherence to Standard Igbo orthography would significantly enhance the quality and reliability of AI-generated translations.

Finally, further studies should extend this line of inquiry by examining the performance of other AI translation systems and applying similar analyses to a wider range of African languages and literary texts. Future studies may examine a broader range of culturally significant expressions and dialogue excerpts from the selected text *Nke M Ji Ka*, G.I. Nwozuzu (2013) to provide a broader and more comprehensive assessment of AI translation performance. This would help determine whether the patterns of semantic retention, pragmatic loss, cultural attenuation, and orthographic deviation identified in this study remain consistent across a larger dataset. Such studies would contribute to a deeper understanding of the strengths and limitations of

artificial intelligence in the translation of culturally embedded expressions and indigenous literary discourse.

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