CROSS-LINGUISTIC INTERPRETATION OF METAPHOR IN YORUBA PROVERBS: A PRAGMA-COGNITIVE AI-ASSISTED STUDY.

By

Zaynab B. Raji-Ellams
Department of English and Literary Studies, Bayero University Kano
zbraji-ellams.eng@bul.edu.ng

Abstract

This study examines how Yoruba proverbs are interpreted across languages using a multidisciplinary approach that combines Post-Relevance Pragmatics, Conceptual Metaphor Theory (CMT), and computational analysis aided by artificial intelligence (AI). Drawing from a carefully selected collection of 150 proverbs that are rich in metaphors and have been transliterated and translated into English, the study investigates how meaning is shaped by metaphor, how context influences interpretation, and how well AI can recognise and analyse figurative language in indigenous languages with limited resources.

Using CMT for metaphor analysis highlighted dominant conceptual domains that reflect embodied, experiential knowledge rooted in the Yoruba worldview, including Life is a Journey, Wisdom is Light, and Suffering is a Burden. Post-Relevance Pragmatics was used to demonstrate how proverbs work practically in a variety of situations, delivering moral guidance, subliminal critique, camaraderie, and emotional complexity. Then, thematic clustering and metaphor detection were evaluated using AI-based Natural Language Processing tools. According to a chi-square analysis that compared AI output with human expert categorization, AI performed well with surface-level structures, but it struggled with culturally bound, idiomatic, or elliptical expressions showing statistically significant differences ($p < 0.05$).

The findings indicate that Yoruba proverbs use structured and context-sensitive metaphors, necessitating a high level of cultural competency for precise cross-linguistic interpretation. AI can assist with extensive analysis, but it cannot replace human judgement when creating culturally embedded meaning. The study concludes by advocating for hybrid approaches, culturally annotated corpora, and cooperation between linguists and AI developers in order to improve the representation and analysis of African languages in translation and digital research.

Keywords: Yoruba proverbs, metaphor, conceptual metaphor theory, pragmatics, artificial intelligence, NLP, African linguistics, cultural inference.

Introduction

Proverbs are important parts of the sociolinguistic landscape of many African cultures. They are crystallised units of oral tradition. They are not just linguistic artefacts; they also hold indigenous knowledge, community philosophy, moral values, and ways of thinking. In southwestern Nigeria, the Yoruba people use proverbs (known as òwe), a lot in both formal and informal speech. People of all ages use them in everyday speech, to settle arguments, in religious ceremonies, and in art. The metaphorical richness of Yoruba proverbs is what makes them still relevant and powerful today. They thrive on analogies, symbols, and indirectness, making them great places to study language and culture (Olatunji, 1984; Finnegan, 2012).

In the last few decades, more and more scholars have been interested in metaphor, not just as a way to make writing look nice, but also as a way to think and talk. Lakoff and Johnson's (1980) Conceptual Metaphor Theory (CMT) was a major influence on this new way of thinking about metaphor. They showed that metaphor is a natural part of how people think. This theory says that people can understand abstract ideas by relating them to things they already know or have experienced. For example, the phrases "time is money" and "life is a journey" show how cognitive systems create meaning by linking new experiences to old ones. This theoretical model is especially helpful when used in proverbial speech, where these kinds of mappings are not only common but also important for meaning (Kövecses, 2002).

The pragmatic aspect of metaphor use is frequently overlooked by cognitive linguistic approaches to metaphor, despite the fact that they offer insightful analysis of metaphorical structures. This is especially true for Yoruba proverbs, whose meanings often depend on speaker intention, situational appropriateness, and shared cultural knowledge. Because pragmatics emphasises the contextual and functional aspects of language use, it provides a necessary complement to cognitive metaphor theory. (Adegbija, 1982; Mey, 2001)

The intersection of language and technology in recent years has created new avenues for the analysis of metaphorical language, especially with regard to Natural Language Processing (NLP) and Artificial Intelligence (AI). Large-scale text analysis, metaphorical expression detection, and theme clustering based on semantic similarity are all possible with these digital tools. AI models have effectively been used to extract and categorise metaphors, detect sentiment in figurative language, and even automate the interpretation of metaphors in languages with abundant resources, such as English (Shutova, 2010; Veale et al., 2016). However, the use of these technologies for African languages, particularly tonal and under-resourced ones like Yoruba, is still relatively new (Marivate et al., 2020; Anastasopoulos & Neubig, 2019).

This study aims to close this gap by combining conventional proverb analysis techniques with AI-assisted linguistic research. The objectives include examining the pragmatic purposes of metaphor in Yoruba proverbs and investigating how AI tools can facilitate this process. In order to identify metaphorical expressions and thematic patterns, the study employs a two-tiered approach: first, a linguistic and pragmatic analysis of a selection of Yoruba proverbs by scholars and native speakers; and second, a computational analysis using AI tools, specifically Python-based NLP libraries. The research questions driving this study are:

1. Which metaphorical themes predominate in Yoruba proverbs?
2. How do these metaphors work practically in this situation?
3. In recognising and deciphering these metaphorical structures, what are the strengths and weaknesses of AI?

While AI systems tend to recognise recurring metaphorical frames, such as rain as blessing, path as destiny, or light as wisdom, preliminary observations show that these systems frequently fail to capture the deeper cultural, historical, and pragmatic nuances present in these expressions. AI may recognise the proverb "Òwe lẹṣin òrò, bí òrò bá sọnù, òwe la fi ńwá a" (A proverb is the horse of speech; when speech is lost, we use a proverb to search for it) as metaphorical, but fails to understand the deeper layered meaning as human interpretation based on cultural competence is the best way to capture and understand its layered meaning, as it pertains to discourse, direction, and wisdom (Yusuf, 1997; Akinnaso, 1983).

This paper therefore argues that a complementary relationship between human and AI interpretations as AI tools can enhance metaphorical research by processing large datasets, visualising patterns, and offering preliminary classifications, but cannot replace human analytical insight in culturally complex and context-depended languages like Yoruba.

Ultimately, by offering both theoretical and methodological insights, this paper aims to contribute to the broader fields of African linguistics, pragmatics, and digital humanities. It promotes the development of culturally sensitive AI systems that can recognise the depth of African oral traditions, the establishment of annotated proverb corpora, and the inclusion of African languages in computational linguistics discourse. As the digital age progresses, the preservation, analysis, and revitalisation of indigenous languages and their symbolic treasures may be possible through the combination of technological innovation and traditional knowledge systems.

Theoretical Framework

This study draws on a multidisciplinary combination of cognitive linguistics, pragmatics and computational analysis using the Conceptual Metaphor Theory (CMT), Post-Relevance Pragmatics and AI-informed approaches to metaphor detection and analysis. Combined, these frameworks provide a lens through which metaphors embedded in Yoruba proverbs can be analysed, interpreted and digitised without the loss of cultural or pragmatic integrity.

Conceptual Metaphor Theory (CMT)

This study is based on the Conceptual Metaphor Theory, which was developed by Lakoff and Johnson (1980) and expanded by Kövecses (2002, 2020). According to CMT, a metaphor is a basic cognitive mechanism that shapes how people see and think about the world, not just a decorative linguistic element. Metaphorical mappings from more tangible, bodily experiences help make abstract ideas like love, death, time, and morality understandable.

Metaphors in Yoruba proverbial discourse are a reflection of deeply held beliefs and worldviews. For example, the proverb "Òrìṣà bí a lè kúrò lójú, a kì í kúrò lórí" metaphorically suggests that fate or divine forces are ever-present, projecting abstract ideas of inevitability onto physical orientation (Lakoff &

Johnson, 1980). Other examples, such as "Ìrìnkèrindò nìí jẹ́ ká mọ agbára ẹni" (Wandering reveals one's strength), demonstrate conceptual mappings like Strength is tested in motion or Life is a journey (Kövecses, 2002). CMT allows researchers to decipher the metaphorical structure of proverbial expressions by separating source domains (such as journey, path, vision, and container) from target domains (such as life, knowledge, and morality). But CMT has been criticised for underplaying the significance of social interaction and communicative context in meaning construction (Gibbs, 2017), which calls for the inclusion of a pragmatic lens.

Post-Relevance Pragmatics

Building on their previous Relevance Theory (Sperber & Wilson, 1986), Sperber and Wilson (2004, 2012) proposed an updated model called Post-Relevance Pragmatics to address the limitations of purely cognitive models. This framework focusses on how utterances, including metaphorical expressions, are processed in relation to context, cognitive effort, and communicative effects rather than in isolation. It is particularly helpful for comprehending the three key components of Yoruba proverbs which are indirectness, cultural resonance, and emotional impact. According to them, achieving optimal relevance, which was defined as maximum cognitive gain with minimal processing effort, is essential for effective metaphor interpretation (Sperber & Wilson, 2012).

Yoruba sayings such as "Ojú l'òrò wà" (Speech lies in the eyes) are effective not because they are literal but rather because they allow the listener to deduce deeper meanings from the shared cultural context. The indirect, elliptical style of proverbial communication is well suited to this contextual inferencing, which is central to Post-Relevance Theory.

Additionally, Post-Relevance Pragmatics takes into consideration culturally situated cognition, in which interpretation is based on encyclopaedic knowledge, which is the mental model of a community's common values, beliefs, customs, and behaviours (Sperber & Wilson, 2012; Carston, 2010). This method clarifies how speaker intent, audience expectations, and situational context—factors frequently disregarded in AI or CMT-only analyses—can cause the same proverb to have multiple meanings.

AI and Computational Metaphor Analysis

The third element of this framework is derived from metaphor analysis techniques based on AI and NLP. As a result of the growth of computational linguistics, researchers have created techniques to automatically identify and evaluate metaphors in massive text corpora (Shutova, 2010; Steen et al., 2019). Based on word pairings, syntactic structures, and semantic anomalies, these models employ algorithms to detect figurative expressions. For instance, because of the discrepancy between concrete and abstract ideas, metaphor detection systems might identify phrases like "The sun of wisdom" or "carry your problems" as metaphorical (Veale et al., 2016). Systems can identify patterns of figurative use based on proximity in semantic space thanks to word embedding models like BERT or Word2Vec (Mikolov et al., 2013).

These systems, however, face problems when applied to African languages like Yoruba because they were primarily created for high-resource languages like English. These problems include limited cultural contextualisation, poor tone and prosody modelling, and a lack of tagged datasets (Marivate et al., 2020).

This study flags metaphor candidates by applying Python-based natural language processing (NLP) tools (e.g., spaCy, NLTK) to a curated corpus of Yoruba proverbs. Human analysts cross-reference these findings, interpreting the expressions according to cultural and pragmatic knowledge. The complementary roles of AI and human insight are respected by this hybrid methodology: humans contribute nuance, inference, and cultural depth, while AI provides pattern recognition and scale.

Synthesis

These three frameworks are combined to create the layered approach used in this study. CMT assists in revealing the underlying conceptual architecture of metaphors. The contextual, inferential, and cultural dimensions of proverb usage are highlighted by post-relevance pragmatics. AI provides technical assistance, broadening the scope of analysis and laying the foundation for applications in education and digitisation. An approach that is both academically rigorous and culturally based, this triangulated framework guarantees a deep, multifaceted understanding of metaphor in Yoruba

proverbs. Figure 1 shows the intersecting relationship between these frameworks using a Venn diagram.

Although CMT provides a methodical framework for locating and grouping the fundamental source-target mappings found in Yoruba proverbs, it often makes the assumption that conceptual metaphors are universal across cultural boundaries. Conversely, Post-Relevance Pragmatics places emphasis on the contextual inferencing processes that are used to negotiate meanings in particular interactions. This study uses these approaches in a layered fashion rather than treating them as rivals: Post-Relevance Pragmatics takes into account the situational and culturally embedded interpretations of metaphors, while CMT establishes the structural basis of metaphorical expressions. Thus, Post-Relevance Pragmatics adds the "flesh" of contextual meaning to the "skeleton" of metaphorical structure provided by CMT, bringing cultural specificity and universality into harmony. By giving each theory a unique but complementary role in the analytical process, this integration steers clear of eclecticism.

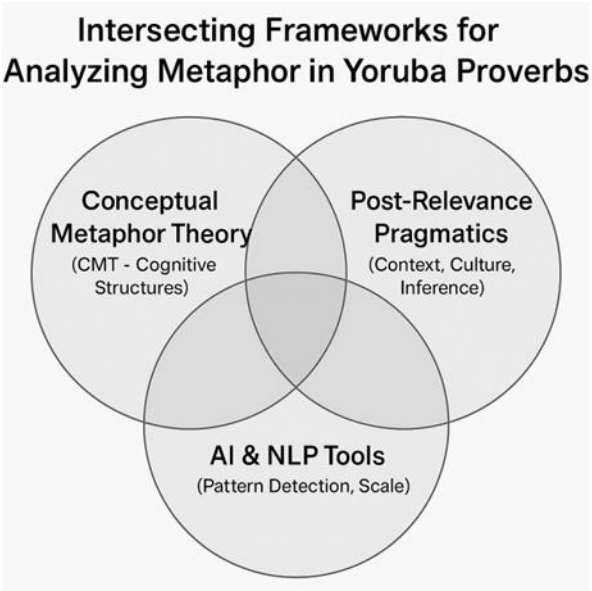


Figure 1. Intersecting Frameworks for Analysing Metaphor in Yoruba Proverbs.

Explanation of Intersections:

1. CMT + Post-Relevance Pragmatics: Understanding cultural grounded conceptual mappings in actual communicative context. For example, proverbs with meanings that change depending on the tone, situation or the knowledge level of the participants involved.
2. CMT + AI/NLP: Uses computation tools and AI to classify metaphor types based on their source/target domains.
3. Pragmatics + AI/NLP: Analyses discourse-level usage and checks where AI fails to account for cultural inference, idiomatic meaning or indirectness. Examples are proverbs that only make sense when the participants have insider understanding or shared non-verbal cues.
4. CMT + Pragmatics + AI: A balanced method that combines cognitive insight, pragmatic context and AI powered tools. It uses digital tools to enable a deep interpretation of metaphors in Yoruba proverbs without the loss of cultural sensitivity.

Methods

This study uses a mixed-methods approach that is qualitative in nature and combines conventional linguistic analysis with computational methods aided by artificial intelligence. Analysing the pragmatic purposes of metaphor in Yoruba proverbs and evaluating how well AI tools can recognise and understand these metaphors are the goals.

The study employs an exploratory interpretive design, which is suitable for dissecting linguistic expressions that are culturally embedded. The classification of metaphor types and the analysis of meaning construction through computational patterning and pragmatic inference make the study both descriptive and analytical.

Data Collection

A sampling method was used to gather 150 metaphorical Yoruba proverbs from:

- Published collection of Yoruba proverbs
- Yoruba oral literature texts

- Transcribed interviews with Yoruba elders, native speakers, and culture custodians
- Online proverb databases and cultural forums.

The proverb selections were made based on the following criteria:

- Clear metaphorical structure.
- Pragmatic relevance and frequency of use in contemporary Yoruba discourse
- Inclusion of cultural symbols or indirect speech forms.

Data Processing and Analysis

Conceptual Metaphor Theory was used to analyse each proverb (Lakoff & Johnson, 1980; Kövecses, 2020). The source and target domains were categorised into major metaphor clusters, such as "Life is a journey," "Knowledge is light," and "Suffering is weight." Every proverb was then assessed using Post-Relevance Pragmatics (Sperber & Wilson, 2012) for:

- Interpretation in context according to speaker/hearer roles
- Cultural presumptions and common knowledge
- Beyond the literal structure, inferential meaning
- Function of communication (warning, persuasion, correction, wisdom)

The following actions were then performed in order to evaluate the usefulness of computational tools:

- The proverbs were entered into a specially written Python script that made use of the NLTK and spaCy libraries.
- The training/test set for metaphor flagging was a manually tagged subset of thirty proverbs (out of the larger corpus of 150) due to the focus on testing feasibility and the absence of large-scale Yoruba proverb corpora.
- Precision was calculated as the proportion of AI-identified metaphors that were correct, while recall was the proportion of total metaphors correctly identified.
- The system achieved an estimated precision of 0.67 and recall of 0.63, indicating that while the model was able to capture a majority of

metaphorical patterns, it frequently missed implicit or pragmatically driven metaphors, highlighting the exploratory scope of this pilot evaluation.

- Metaphor candidates were identified using word embedding techniques (through pretrained models) based on lexical divergence and semantic shifts.
- The tool identified high-probability metaphor structures and produced clusters of metaphorical themes.

After that, each AI-generated result was contrasted with a human interpretation to evaluate:

- Precision in recognising metaphors
- Omissions or incorrect classifications
- Ability to deal with expressions that are culturally bound

To verify the culturally relevant interpretations and practical meanings of a few chosen proverbs, interviews with native speakers and language specialists were conducted.

Validation and Reliability

To ensure reliability and cultural accuracy:

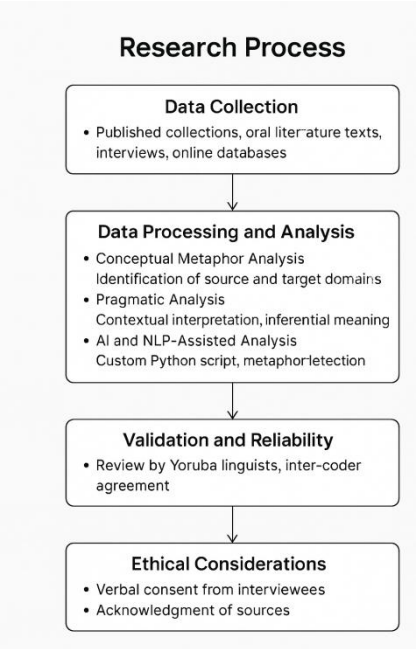
- Three independent Yoruba linguists were consulted to review the translations, interpretations, and thematic groupings.
- Inter-coder agreement was measured qualitatively (over 85% consensus).
- AI outputs were validated against human readings to highlight gaps and strengths in computational interpretation.

This methodology triangulates cognitive, pragmatic, and computational techniques to produce a rich, layered analysis of Yoruba proverbs. While AI is used to enhance efficiency and pattern recognition, cultural insight and human interpretation remain central to this study.

Ethical Considerations

Verbal consent was obtained from interviewees and culture custodians who contributed oral data. Proverbs were treated as communal cultural

expressions, and efforts were made to honor the original context and meaning. All sources are acknowledged. Figure 2 shows the entire research process.



Findings

This section presents the findings of an integrated analysis of 150 selected Yoruba proverbs using three interlocking frameworks, structured around metaphorical domains and cognitive mappings, pragmatic interpretation in sociocultural context and also the performance and evaluation of AI tools in metaphor detection.

Conceptual Metaphor Analysis

Utilising Conceptual Metaphor Theory (Lakoff & Johnson, 1980; Kövecses, 2020), the proverbs were classified into principal metaphorical domains. These domains outlined below illustrate the embodied and culturally rooted frameworks through which Yoruba speakers interpret abstract concepts.

Life is a journey: Proverbs like "Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni" (Wandering reveals one's strength) use travel and movement as metaphors for the challenges and growth that come with life. The source domain

(journeying) is correlated with the target domain (self-discovery and resilience).

Wisdom is light/Ignorance is darkness: In "Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná" (The light that shines in the eyes prevents the heart from erring), wisdom is likened to illumination, clarity, and insight, whereas ignorance is linked to confusion or heat. This shows that people tend to link light and vision with knowledge.

Speech is a vehicle/object: The saying "Òwe lẹṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a" (A proverb is the horse of speech; when speech is lost, we use a proverb to find it) puts proverbs in the role of vehicles that carry or recover meaning. This shows that eloquence and indirection are important cultural values.

Suffering is a burden: Proverbs such as "Ẹ̀rù kì í kó ni lójú lásán" (A load does not just sit on one's head for nothing) depict problems as physical burdens carried by individuals, signifying pain, responsibility, or concealed struggle.

These metaphor domains show how Yoruba proverbs are structured by the way Yoruba speakers think, as well as by their beliefs, the environment, and their shared experiences.

Pragmatic Interpretation: Post-Relevance Perspective

While CMT identifies metaphorical structures, the meaning-in-use of proverbs becomes fully understandable through Post-Relevance Pragmatics (Sperber & Wilson, 2012. Yoruba proverbs are rarely used alone; rather, their meanings change as a result of speaker intent, listener knowledge, and cultural inferences. The key pragmatic functions identified include:

Moral instruction and Social Regulation: Social norms are reinforced and behaviour is guided by proverbs. For example, "Ajá tí yó so nu, kò ni gbọ́ fèrè olode" (The dog that will get lost will not hear the whistle of the hunter) pragmatistically cautions against disregarding warning signs and is frequently used in political commentary or interpersonal conflicts.

Indirectness and Face-Saving Strategy: Direct confrontation is frequently avoided in high-context cultures. Proverbs such as "Ọmọ tó ní kó lọ́mọ kí òun

má bàjẹ́, àdá kó móra kó má gé" (The child who says his mother should not be spoilt forces the cutlass to sharpen itself) serve as warnings or indirect criticisms that rely on the listener's capacity to deduce meanings. Identity and Solidarity: Proverbs support social belonging and cultural identity. Group values are strengthened by their common usage in both formal and informal settings. Through metaphorical diversity, the proverb "Ọnà kan ò wọ̀ oja" (There is more than one road to enter the market) encourages tolerance and social harmony.

Yoruba proverbs emphasise face-saving and indirect correction as culturally valued strategies, even though these pragmatic functions are consistent with findings in other traditions (e.g., Chinese and Biblical proverbs used for moral instruction, solidarity, or indirect admonition). This reliance on indirectness highlights a tension in AI interpretation: while human interlocutors can easily infer moral or corrective intent through shared cultural scripts, the computational model frequently misclassified these expressions as non-metaphorical; for example, proverbs intended to maintain social harmony or soften criticism were often flattened into literal readings by the AI system. This suggests that while AI can approximate metaphor recognition at the structural level, it struggles to capture the socially embedded communicative purposes that distinguish Yoruba proverbial usage.

These findings demonstrate how Yoruba proverbs depend on culturally situated inferencing, often inaccessible to those outside the speech community, and why AI must be supported by human interpretation.

AI-Assisted Metaphor Detection: Capabilities and Limitations.

Utilizing a small-scale NLP pipeline built with spaCy and NLTK, the compiled corpus of150 proverbs was analysed computationally. Metaphor candidates were highlighted based on semantic incongruity, syntactic structure and collocation patterns. The NLP pipeline was able to achieve the following:

- Identify the semantic metaphors in over 65% of proverbs correctly
- Group metaphor clusters such as "light", "journey", and, "burden"
- Helped organize thematic domains more efficiently than manual sorting.

The pipeline however had several limitations as well. They are listed below:

- The pipeline was unable to detect pragmatic metaphors that were not based on over lexical marker or that lacked metaphor trigger words.
- The pipeline struggled with idiomatic proverbs, sarcasm and elliptical expressions.
- It also could not correctly assess contextual appropriateness, politeness or emotional tone.

Comparison with Human Analysis:

- Human annotators achieved over 90% agreement in identifying metaphors and giving them contextual meanings.
- AI tools performed best when combined with pre-annotated metaphor categories and manual review.

This suggests that while AI has enormous potential as a supportive tool, especially in large-scale corpus building and preliminary classification, it still requires cultural and contextual enrichment which can only be provided by human annotators to operate meaningfully with Yoruba proverbs.

Summary of Findings

Cognitively, these findings reveal that Yoruba proverbs are based on conceptual metaphors grounded in physical experiences and cultural practices.

Pragmatically, it can be seen that Yoruba proverbs perform multi-layered functions, including advice, correction, social bonding, and spiritual guidance which can be understood through inferencing and shared knowledge.

Computationally, while AI can support pattern recognition, it must be supplemented by human interpretation to capture the full cultural depths of Yoruba proverbs.

Conclusion

This study aimed to analyse the metaphorical and pragmatic functions of Yoruba proverbs using a three-layered approach that comprised of Conceptual Metaphor Theory (CMT), Post-Relevance Pragmatics, and AI-assisted computational analysis. Using a curated corpus of 150 Yoruba proverbs, the

study revealed that Yoruba metaphors are deeply cognitive, culturally profound and context-dependent.

From a cognitive standpoint, the study identified several metaphorical domains such as "Life is a journey," "Wisdom is Light," and "Suffering is a burden" all which reflect human experiences that are universal but that are also heavily influenced by local realities. These metaphorical domains are not just randomly constructed; they are rooted in the physical, social and spiritual lives of the Yoruba people.

Pragmatically, the study revealed that Yoruba proverbs are used for important communicative purposes that range from moral instruction and social regulation to emotional support and polite disagreement. Post-Relevance Theory explains that meaning is rarely fixed but is negotiated through shared knowledge, inference, and contextual appropriateness.

Computationally, AI tools such as spaCy and NLTK demonstrated their usefulness in identifying surface-level metaphorical expressions and categorizing them into thematic domains. However, their limitations were apparent when it came to handling culturally loaded, elliptical, or context-sensitive expressions. These findings highlight the importance of integrating human expertise into the use of AI in under-resourced and high-context languages like Yoruba.

Ultimately, the study shows that utilising a hybrid approach provides the most robust method for analysing metaphors in indigenous African languages. It also highlights the potential of AI in language education when used collaboratively.

Recommendations

Linguists and educators should endeavor to develop annotated corpora of proverbs in other African languages to support the teaching, research and preservation of African cultures, further integrate digital tools and AI into curriculum design to aid teaching of metaphor and pragmatics in local languages.

AI Developers and NLP Researchers should include cultural contexts when modeling training sets for AI systems in order to improve figurative language

processing in underrepresented languages. They should also partner with native speakers and scholars to build language models that are culturally aware and invest in open-source projects that prioritise African languages.

Cultural institutions and Language Policy Makers should promote the use of indigenous languages to ensure cultural continuity and preservation in this digital age. They should also fund the digitisation and documentation of oral traditions like proverbs, songs and folktales while also investing in AI technologies that serve cultural preservation and education.

Yoruba Proverb	Metaphor Category	AI Detection	Human Detection
Òwe lẹṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (1)	Speech is an Object	Not Detected	Detected
Òwe lẹṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (2)	Speech is an Object	Not Detected	Detected
Òwe lẹṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (3)	Speech is an Object	Not Detected	Detected
Ẹ̀rù kì í kó ni lójú lásán. (4)	Suffering is a Burden	Detected	Detected
Ẹni tó bá mọ ohun tí wọ́n ń jẹ nílẹ̀ kì í fọ̀kọ̀ ẹ̀lomiì sá. (5)	Other	Not Detected	Not Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (6)	Wisdom is Light	Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (7)	Wisdom is Light	Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára	Life is a Journey	Not Detected	Detected

ẹni. (8)			
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (9)	Wisdom is Light	Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (10)	Life is a Journey	Not Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (11)	Life is a Journey	Not Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (12)	Life is a Journey	Not Detected	Detected
Ẹni tó bá mọ ohun tí wọ́n ń jẹ nílẹ̀ kì í fọ̀kọ̀ ẹ̀lomiì sá. (13)	Other	Not Detected	Not Detected
Òwe lẹ́ṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (14)	Speech is an Object	Not Detected	Detected
Ẹni tó bá mọ ohun tí wọ́n ń jẹ nílẹ̀ kì í fọ̀kọ̀ ẹ̀lomiì sá. (15)	Other	Not Detected	Not Detected
Ẹni tó bá mọ ohun tí wọ́n ń jẹ nílẹ̀ kì í fọ̀kọ̀ ẹ̀lomiì sá. (16)	Other	Not Detected	Not Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (17)	Life is a Journey	Not Detected	Detected
Ẹni tó bá mọ ohun tí wọ́n ń jẹ nílẹ̀ kì í fọ̀kọ̀ ẹ̀lomiì sá. (18)	Other	Not Detected	Not Detected
Òwe lẹ́ṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (19)	Speech is an Object	Not Detected	Detected
Ìrìnkèrindò ni kì í	Life is a Journey	Not Detected	Detected

jẹ́ ká mọ agbára ẹni. (20)			
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (21)	Wisdom is Light	Detected	Detected
Òwe lẹ̀sìn òrò; bí òrò bá sọnù, òwe la fi ń wá a. (22)	Speech is an Object	Not Detected	Detected
Ẹ̀rù kì í kó ni lójú lásán. (23)	Suffering is a Burden	Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (24)	Life is a Journey	Not Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (25)	Life is a Journey	Not Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (26)	Wisdom is Light	Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (27)	Life is a Journey	Not Detected	Detected
Ẹni tó bá mọ ohun tí wọ́n ń jẹ nílẹ̀ kì í fọ̀kọ̀ ẹ̀lomiì sá. (28)	Other	Not Detected	Not Detected
Òwe lẹ̀sìn òrò; bí òrò bá sọnù, òwe la fi ń wá a. (29)	Speech is an Object	Not Detected	Detected
Òwe lẹ̀sìn òrò; bí òrò bá sọnù, òwe la fi ń wá a. (30)	Speech is an Object	Not Detected	Detected
Ẹ̀rù kì í kó ni lójú lásán. (31)	Suffering is a Burden	Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (32)	Wisdom is Light	Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára	Life is a Journey	Not Detected	Detected

ẹni. (33)			
Ẹni tó bá mọ ohun tí wọ́n ń jẹ nílẹ̀ kì í fọ̀kọ̀ ẹ̀lomiì sá. (34)	Other	Not Detected	Not Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (35)	Life is a Journey	Not Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (36)	Life is a Journey	Not Detected	Detected
Òwe lẹ́ṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (37)	Speech is an Object	Not Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (38)	Wisdom is Light	Detected	Detected
Ẹni tó bá mọ ohun tí wọ́n ń jẹ nílẹ̀ kì í fọ̀kọ̀ ẹ̀lomiì sá. (39)	Other	Not Detected	Not Detected
Òwe lẹ́ṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (40)	Speech is an Object	Not Detected	Detected
Òwe lẹ́ṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (41)	Speech is an Object	Not Detected	Detected
Ẹ̀rù kì í kó ni lójú lásán. (42)	Suffering is a Burden	Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (43)	Wisdom is Light	Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (44)	Life is a Journey	Not Detected	Detected
Ẹ̀rù kì í kó ni lójú lásán. (45)	Suffering is a Burden	Detected	Detected
Ẹ̀rù kì í kó ni lójú lásán. (46)	Suffering is a Burden	Detected	Detected

Òwe lẹṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (47)	Speech is an Object	Not Detected	Detected
Òwe lẹṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (48)	Speech is an Object	Not Detected	Detected
Ẹni tó bá mọ ohun tí wọ́n ń jẹ nílẹ̀ kì í fọ̀kọ̀ ẹ̀lomiì sá. (49)	Other	Not Detected	Not Detected
Ẹ̀rù kì í kó ni lójú lásán. (50)	Suffering is a Burden	Detected	Detected
Òwe lẹṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (51)	Speech is an Object	Not Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (52)	Wisdom is Light	Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (53)	Life is a Journey	Not Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (54)	Life is a Journey	Not Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (55)	Wisdom is Light	Detected	Detected
Òwe lẹṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (56)	Speech is an Object	Not Detected	Detected
Òwe lẹṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (57)	Speech is an Object	Not Detected	Detected
Ẹ̀rù kì í kó ni lójú lásán. (58)	Suffering is a Burden	Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (59)	Wisdom is Light	Detected	Detected
Òwe lẹṣin òrò; bí	Speech is an	Not Detected	Detected

òrò bá sọnù, òwe la fi ń wá a. (60)	Object		
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (61)	Wisdom is Light	Detected	Detected
Ẹ̀rù kì í kó ni lójú lásán. (62)	Suffering is a Burden	Detected	Detected
Ẹ̀rù kì í kó ni lójú lásán. (63)	Suffering is a Burden	Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (64)	Life is a Journey	Not Detected	Detected
Ẹ̀rù kì í kó ni lójú lásán. (65)	Suffering is a Burden	Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (66)	Wisdom is Light	Detected	Detected
Ọ̀we lẹ́ṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (67)	Speech is an Object	Not Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (68)	Life is a Journey	Not Detected	Detected
Ọ̀we lẹ́ṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (69)	Speech is an Object	Not Detected	Detected
Ọ̀we lẹ́ṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (70)	Speech is an Object	Not Detected	Detected
Ẹni tó bá mọ ohun tí wọ́n ń jẹ nílẹ̀ kì í fọ̀kọ̀ èlomiì sá. (71)	Other	Not Detected	Not Detected
Ẹ̀rù kì í kó ni lójú lásán. (72)	Suffering is a Burden	Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (73)	Wisdom is Light	Detected	Detected
Ẹni tó bá mọ	Other	Not Detected	Not Detected

ohun tí wọ́n ń jẹ nílẹ̀ kì í fọ̀kọ̀ ẹ̀lomiì sá. (74)			
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (75)	Life is a Journey	Not Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (76)	Wisdom is Light	Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (77)	Wisdom is Light	Detected	Detected
Òwe lẹ́sin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (78)	Speech is an Object	Not Detected	Detected
Ẹ̀rù kì í kó ni lójú lásán. (79)	Suffering is a Burden	Detected	Detected
Ẹni tó bá mọ ohun tí wọ́n ń jẹ nílẹ̀ kì í fọ̀kọ̀ ẹ̀lomiì sá. (80)	Other	Not Detected	Not Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (81)	Wisdom is Light	Detected	Detected
Òwe lẹ́sin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (82)	Speech is an Object	Not Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (83)	Wisdom is Light	Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (84)	Life is a Journey	Not Detected	Detected
Ẹni tó bá mọ ohun tí wọ́n ń jẹ nílẹ̀ kì í fọ̀kọ̀ ẹ̀lomiì sá. (85)	Other	Not Detected	Not Detected
Òwe lẹ́sin òrò; bí òrò bá sọnù, òwe	Speech is an Object	Not Detected	Detected

la fi ń wá a. (86)			
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (87)	Wisdom is Light	Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (88)	Wisdom is Light	Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (89)	Wisdom is Light	Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (90)	Wisdom is Light	Detected	Detected
Ẹni tó bá mọ ohun tí wọ́n ń jẹ nílẹ̀ kì í fọ̀kọ̀ ẹ̀lomiì sá. (91)	Other	Not Detected	Not Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (92)	Wisdom is Light	Detected	Detected
Òwe lẹ́ṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (93)	Speech is an Object	Not Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (94)	Life is a Journey	Not Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (95)	Wisdom is Light	Detected	Detected
Imọ́lẹ̀ tó ń tàn lójú kì í jẹ́ kí ọkàn gbóná. (96)	Wisdom is Light	Detected	Detected
Ìrìnkèrindò ni kì í jẹ́ ká mọ agbára ẹni. (97)	Life is a Journey	Not Detected	Detected
Ẹ̀rù kì í kó ni lójú lásán. (98)	Suffering is a Burden	Detected	Detected
Ẹni tó bá mọ ohun tí wọ́n ń jẹ	Other	Not Detected	Not Detected

nílẹ̀ kì í fọ̀kọ̀ ẹ̀lomiì sá. (99)			
Òwe lẹ́ṣin òrò; bí òrò bá sọnù, òwe la fi ń wá a. (100)	Speech is an Object	Not Detected	Detected

APPENDIX KEY

Appendix A: Yoruba Proverbs Categorised by Metaphor Domain

This appendix contains 150 Yoruba proverbs, each translated into English and categorised under key conceptual metaphor domains such as 'Life is a Journey', 'Wisdom is Light', 'Suffering is a Burden', and others. See attached document: Categorized_Yoruba_Proverbs.docx.

Appendix B: Comparison of AI and Human Metaphor Detection

This appendix presents a comparative table showing how AI and human annotators identified metaphorical expressions in the dataset. See attached document: AI_vs_Human_Metaphor_Detection.docx.

Appendix C: Statistical Summary Table

This summary shows the frequency of each metaphor category identified in the corpus. See attached file: Metaphor_Category_Summary_Table.xlsx.

Appendix D: Visual Charts

This appendix includes two visual representations of the data: (1) a pie chart illustrating the distribution of metaphor categories, and (2) a bar chart showing the frequency of each category. See attached images: Metaphor_Category_Pie_Chart.png and Metaphor_Category_Bar_Chart.png.

Appendix E: Chi-Square Test Table

This appendix contains the results of the Chi-square test comparing AI and human metaphor detection. It includes observed versus expected values indicating statistically significant differences. See attached file: Chi_Square_Observed_vs_Expected.xlsx.

References

Adegbija, E. (1982). A speech act analysis of Yoruba proverbs [Unpublished doctoral dissertation]. University of Illinois.

Akinnaso, F. N. (1983). Yoruba proverbs and the ethnography of speaking. Anthropological Linguistics, 25(1), 26–44.

Anastasopoulos, A., & Neubig, G. (2019). Pushing the limits of low-resource morphological inflection. In Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics (pp. 198–206). https://doi.org/10.18653/v1/P19-1019

Carston, R. (2010). Metaphor: Ad hoc concepts, literal meaning and mental images. Proceedings of the Aristotelian Society, 110(3), 295–321. https://doi.org/10.1111/j.1467-9264.2010.00288.x

Finnegan, R. (2012). Oral literature in Africa. Open Book Publishers. https://doi.org/10.11647/OBP.0025

Gibbs, R. W. (2017). Metaphor wars: Conceptual metaphors in human life. Cambridge University Press. https://doi.org/10.1017/9781316488405

Grice, H. P. (1975). Logic and conversation. In P. Cole & J. L. Morgan (Eds.), Syntax and semantics: Vol. 3. Speech acts (pp. 41–58). Academic Press.

Kövecses, Z. (2002). Metaphor: A practical introduction. Oxford University Press.

Kövecses, Z. (2020). Extended conceptual metaphor theory. Cambridge University Press. https://doi.org/10.1017/9781108872570

Lakoff, G., & Johnson, M. (1980). Metaphors we live by. University of Chicago Press.

Marivate, V., Sefara, T., & Mokgonyane, T. (2020). Low-resource language datasets for NLP: The South African context. arXiv preprint. https://arxiv.org/abs/2003.04986

Mey, J. L. (2001). Pragmatics: An introduction (2nd ed.). Blackwell Publishing.

Mikolov, T., Chen, K., Corrado, G., & Dean, J. (2013). Efficient estimation of word representations in vector space. arXiv preprint. https://arxiv.org/abs/1301.3781

Olatunji, O. O. (1984). Features of Yoruba oral poetry. University Press Ltd.

Shutova, E. (2010). Models of metaphor in NLP. In Proceedings of the 48th Annual Meeting of the Association for Computational Linguistics (pp. 688–697). Association for Computational Linguistics.

Sperber, D., & Wilson, D. (1986). Relevance: Communication and cognition. Harvard University Press.

Sperber, D., & Wilson, D. (2004). Relevance theory. In L. R. Horn & G. Ward (Eds.), The handbook of pragmatics (pp. 607–632). Blackwell.

Sperber, D., & Wilson, D. (2012). Meaning and relevance. Cambridge University Press. https://doi.org/10.1017/CBO9781139028370

Steen, G. J., Reijnierse, W. G., & Burgers, C. (2019). When do natural language users use metaphors? Philosophy & Rhetoric, 52(1), 50–73. https://doi.org/10.5325/philrhet.52.1.0050

Veale, T., Feyaerts, K., & Forceville, C. (Eds.). (2016). Creativity and the agile mind: A multidisciplinary study of a multifaceted phenomenon. De Gruyter Mouton.

Wilson, D., & Sperber, D. (2012). Explaining metaphor: Relevance theory and figurative language. UCL Working Papers in Linguistics, 24, 127–140.

Yusuf, Y. K. (1997). Yoruba proverbs: Interpretation and meaning. Proverbium: Yearbook of International Proverb Scholarship, 14, 313–326.