

The Trans-Babelism Paradox: When AI Translates Meaning but Not Culture

Hoang-Nam Tran, Tokushima University, Japan

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Abstract

This presentation introduces The Trans-Babelism Paradox (TBP), a conceptual framework that examines how AI transcends linguistic barriers yet fails to convey cultural depth. For decades, English has functioned as the global lingua franca, centralizing access to knowledge and power. AI-driven translation now promises to dissolve this monopoly, creating a post-lingua-franca world where all languages can coexist through technological mediation. However, beneath this equality lies a paradox: while AI enables lexical comprehension across languages, it often erases the cultural, emotional, and contextual nuances that give language its human texture. Drawing on sociolinguistics, cognitive semiotics, and AI ethics, this paper proposes a two-layer model of translation: (a) the lexical-syntactic layer effectively handled by AI; and (b) the cultural-cognitive layer that remains irreducibly human. The study argues that true communication in the AI era will depend not on achieving universal intelligibility but on preserving cultural particularity within automated translation systems. The TBP challenges the optimism surrounding AI multilingualism by asking: if machines can translate every word but misunderstand every world, have we truly transcended Babel or merely rebuilt it in code?

Keywords: Trans-Babelism Paradox (TBP), AI translation, multilingual communication, cultural meaning, algorithmic mediation

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Introduction

The history of global communication has long been shaped by the dominance of particular languages that function as gateways to knowledge, authority, and social mobility. Latin, French, and later English served as *lingua francas* that enabled large-scale interaction while simultaneously reinforcing hierarchies of power (Crystal, 2003; Phillipson, 2018). In the contemporary era, English continues to dominate scientific publication, digital communication, and international institutions, creating structural advantages for speakers of high-resource languages (Hamel, 2007; Lukianenko, 2024). Recent developments in artificial intelligence appear to challenge this linguistic order. Neural machine translation, multilingual large language models, and speech-to-speech systems allow communication across languages without requiring speakers to learn a common tongue (Ataman et al., 2025; Kocmi et al., 2023). These technologies suggest the possibility of a post-*lingua-franca* world in which linguistic diversity can coexist without restricting global interaction. However, the disappearance of linguistic barriers does not necessarily imply the achievement of mutual understanding. Translation involves not only grammar and vocabulary but also cultural knowledge, social norms, and emotional context (Apter, 2013; Nida, 2002). When these elements are reduced to statistical correspondences, communication may remain formally correct while losing interpretive depth.

Recent theoretical discussions on AI-mediated language have suggested that the digital age is transforming the global linguistic order by shifting authority from human speakers to computational systems (H. N. Tran, 2026). Yet the everyday consequences of this transformation remain insufficiently explored. The present study proposes the concept of the Trans-Babelism Paradox (TBP) to describe the tension between technological intelligibility and cultural incomprehension in AI-mediated communication. The central question guiding this paper is therefore not whether machines can translate languages, but whether automated translation can preserve the human meanings embedded in them.

Language, Power, and Cultural Meaning

Language as Symbolic Power

Language is not only a means of communication but also a form of social power. Sociolinguistic theory shows that linguistic competence often determines access to education, employment, and authority within a global system (Bourdieu, 1991; Canagarajah, 2012). The global spread of English illustrates this dynamic, as proficiency in English frequently functions as a prerequisite for participation in academic and technological networks (Phillipson, 2018). Digital globalization has intensified this hierarchy. Most online content, scientific databases, and training corpora for AI systems are dominated by English-language data, reinforcing the privileged position of high-resource languages (Blodgett et al., 2020; W3Techs, 2025). As a result, linguistic inequality may persist even when translation technologies appear to remove barriers.

Language as Cultural Experience

Language also encodes cultural knowledge, emotional associations, and shared histories. Expressions of politeness, metaphor, humor, and social hierarchy differ across societies and cannot always be translated directly (Apter, 2013; Pavlick & Kwiatkowski, 2019). Translation therefore requires interpretation rather than simple substitution. Human translators rely on

contextual understanding to preserve meaning across languages. Artificial intelligence, in contrast, relies on statistical patterns extracted from large datasets (Bender & Koller, 2020). While this approach allows rapid translation, it may fail to capture the cultural dimensions of communication.

AI Translation and the Illusion of Neutrality

Recent advances in neural translation have led to claims that language differences will soon become irrelevant. Multilingual models can generate fluent text in hundreds of languages, suggesting the emergence of technological multilingualism (Costa-jussà, 2022). However, research has shown that AI systems often reflect biases present in their training data, including cultural, ideological, and linguistic asymmetries (Buolamwini & Gebu, 2018; Crawford, 2022). Studies of machine translation demonstrate that models frequently normalize expressions toward dominant linguistic patterns, particularly those derived from English-language corpora (Gao et al., 2024; Stanovsky et al., 2019). Consequently, the apparent neutrality of AI translation may conceal a deeper form of standardization. These observations indicate that the disappearance of linguistic barriers does not eliminate inequality but may instead transform it.

The Trans-Babelism Paradox

The TBP refers to the contradictory condition in which artificial intelligence appears to overcome linguistic fragmentation while simultaneously weakening the cultural depth required for genuine understanding. Advances in neural machine translation and multilingual language models allow speakers of different languages to communicate with unprecedented ease, suggesting the possibility of a post-lingua-franca era in which no single language dominates global exchange. However, communication involves more than the accurate transfer of words. Language carries emotional, historical, and social meanings that are rooted in shared cultural experience and cannot always be reduced to formal structures. When translation is performed primarily through statistical and computational processes, lexical equivalence may be achieved while contextual meaning is partially lost. The paradox therefore lies in the coexistence of universal intelligibility and interpretive incompleteness: the more effectively machines translate language, the more visible the limits of their ability to translate culture. In this sense, the contemporary condition may be understood as a new form of Babel, not a division caused by different languages, but a division caused by differences in meaning.

In AI-mediated communication, translation often succeeds at the level of linguistic form but remains incomplete at the level of cultural interpretation. Artificial intelligence can reproduce grammar and vocabulary with high accuracy, yet it frequently fails to preserve the contextual knowledge that gives language its human significance. As communication becomes increasingly mediated by algorithmic systems, linguistic barriers diminish while interpretive gaps remain. This shift reflects a broader transformation in the structure of global communication, in which understanding is no longer negotiated primarily between speakers but is filtered through computational infrastructures.

Recent theoretical work on the changing linguistic order in the age of artificial intelligence suggests that communication is increasingly shaped by algorithmic mediation rather than by direct human interaction (H. N. Tran, 2026). Within this environment, linguistic diversity may persist at the surface level, while underlying interpretations become standardized according to the statistical patterns embedded in training data. As a result, translation can achieve formal accuracy without ensuring cultural fidelity.

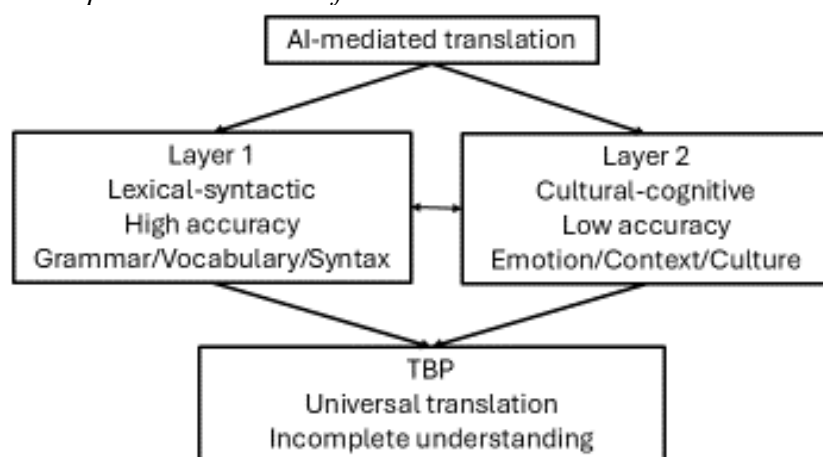
TBP therefore emerges when technological systems enable universal translation while simultaneously exposing the limits of machine interpretation. What appears to be the end of Babel at the level of language reveals a new form of Babel at the level of meaning, where words can be shared globally but cultural understanding remains uneven.

A Two-Layer Model of Translation

To explain the TBP, this study proposes a two-layer model of translation that distinguishes between the structural components of language that can be effectively processed by artificial intelligence and the contextual dimensions that remain resistant to automation (Figure 1). The model is based on the assumption that successful communication requires both linguistic accuracy and cultural interpretation, yet current AI systems primarily operate on the former. By separating these two levels, the paradox of universal intelligibility combined with incomplete understanding can be more clearly described.

Figure 1

Conceptual Framework of the Trans-Babelism Paradox



The figure illustrates the two-layer model of AI-mediated translation. Artificial intelligence processes language effectively at the lexical–syntactic layer, while the cultural–cognitive layer remains only partially interpretable. The imbalance between these layers produces the TBP, in which universal translation coexists with incomplete cultural understanding.

Lexical-Syntactic Layer

The first layer consists of the lexical and syntactic structures of language, including vocabulary, grammar, and basic semantic relations. These elements can be represented statistically and are therefore well suited to computational processing. Neural machine translation and large language models achieve high performance in this domain by learning patterns from large multilingual corpora (Kocmi et al., 2023; Vaswani et al., 2017). When sufficient training data are available, AI systems can produce translations that are grammatically correct and semantically coherent, often approaching human-level performance in high-resource language pairs. The success of this layer explains the widespread perception that AI translation has solved the problem of multilingual communication. Real-time translation tools allow users to interact across languages without specialized training, reinforcing the belief that linguistic barriers are becoming irrelevant (Ataman et al., 2025). However, this effectiveness is largely limited to aspects of language that can be formalized, measured, and optimized. Words are

treated as tokens, and meaning is inferred from statistical probability rather than lived experience (Bender & Koller, 2020). Because the lexical–syntactic layer is computationally tractable, it becomes the primary focus of technological development. As a result, translation systems may appear highly accurate while operating within a reduced representation of language.

Cultural-Cognitive Layer

The second layer consists of cultural, emotional, and contextual dimensions of language that cannot be fully captured through statistical modeling. These include metaphor, humor, politeness, social hierarchy, and historical reference, all of which depend on shared cultural knowledge rather than formal structure (Apter, 2013; Nida, 2002). In human communication, such elements are interpreted through experience, empathy, and familiarity with social norms. In machine translation, however, they are often simplified or normalized. Research on multilingual language models shows that even advanced systems struggle to interpret pragmatic meaning, indirect speech, and culturally specific expressions (Pavlick & Kwiatkowski, 2019; Resck et al., 2025). Because training data are unevenly distributed across languages, models may also reproduce biases toward dominant linguistic and cultural patterns (Blodgett et al., 2020; Crawford, 2022). Consequently, translations that are technically correct may still fail to convey the intended meaning. This limitation becomes more pronounced as language moves away from literal description and toward symbolic or emotional expression. Idioms, proverbs, and humor often rely on shared cultural assumptions that cannot be inferred solely from textual data. When such expressions are translated by AI systems, the result may preserve the surface meaning while losing the deeper significance.

Interaction Between the Two Layers

The TBP emerges from the imbalance between these two layers. The lexical–syntactic layer enables efficient communication across languages, while the cultural–cognitive layer remains only partially interpretable by machine systems. As AI translation becomes more accurate at the structural level, the absence of cultural interpretation becomes more noticeable. Communication appears fluent but may lack the contextual depth required for genuine understanding. This imbalance reflects a broader transformation in the nature of global communication. In earlier linguistic orders, understanding depended primarily on human translators who negotiated meaning between cultures. In the AI-mediated environment, interpretation is increasingly delegated to computational systems trained on large datasets (H. N. Tran, 2026). As a result, linguistic diversity may persist at the level of form, while interpretive frameworks become standardized. The two-layer model therefore clarifies why the removal of linguistic barriers does not automatically produce mutual understanding. Artificial intelligence can translate words with increasing precision, yet the cultural knowledge that gives those words meaning remains only partially accessible to machines. The TBP arises precisely at this point, where technological progress in translation reveals the limits of automated interpretation.

Manifestations of the Paradox in AI Communication

The TBP becomes most visible in practical situations where artificial intelligence successfully translates linguistic form but fails to preserve cultural meaning. While modern translation systems demonstrate high accuracy in controlled evaluations, real-world communication often involves metaphor, emotion, and social context that cannot be fully captured by statistical

models. Examining these cases helps illustrate how the lexical–syntactic layer can function effectively while the cultural–cognitive layer remains only partially interpreted.

Idioms, Metaphor, and Figurative Language

Idiomatic expressions present one of the clearest examples of the paradox. Idioms often rely on culturally specific imagery and cannot be understood through literal translation. Neural translation systems tend to favor lexical equivalence, producing grammatically correct sentences that lack the intended meaning (Apter, 2013). For example, figurative expressions in many languages encode historical or symbolic references that are unfamiliar to speakers outside the cultural context. When translated automatically, these expressions are frequently converted into neutral phrases, preserving informational content but losing emotional and cultural resonance. Research in neural machine translation confirms that figurative language remains a persistent challenge, even for advanced transformer-based models (Toral & Way, 2018). Because such expressions occur less frequently in training data, models often default to literal interpretations. This limitation demonstrates the gap between computational accuracy and interpretive understanding, which lies at the core of the TBP.

Humor, Irony, and Pragmatic Meaning

Humor provides another domain in which translation systems reveal the limits of automated interpretation. Understanding humor requires knowledge of social norms, shared assumptions, and contextual cues that cannot easily be represented as statistical patterns. Studies show that multilingual language models have difficulty detecting sarcasm, irony, and indirect speech, particularly when cultural references are involved (Hossain et al., 2020). Even when the literal meaning of a sentence is translated correctly, the intended tone may be lost or misinterpreted. Pragmatic meaning also varies across cultures. Languages differ in how they express politeness, authority, and emotional distance. Machine translation systems often normalize these differences, producing outputs that are grammatically acceptable but socially inappropriate (Pavlick & Kwiatkowski, 2019). This tendency reflects the fact that AI models learn from large datasets that may not fully represent the diversity of communicative practices. These failures illustrate that successful translation requires more than lexical correspondence. It requires the ability to interpret intention, which remains a primarily human capacity.

Cultural and Ideological Framing in Translation

The paradox is also evident in the translation of political, ethical, and culturally sensitive language. Words such as “freedom,” “tradition,” or “community” carry different meanings across societies. When AI systems translate such terms, they often map them to the closest statistical equivalent rather than preserving their cultural context. Because training data are dominated by high-resource languages, particularly English, translations may reflect the semantic patterns of those languages even when the source text originates elsewhere (Blodgett et al., 2020; Gao et al., 2024). Studies of bias in machine translation have shown that models may reproduce gender stereotypes, ideological assumptions, or culturally specific interpretations present in the data on which they were trained (Crawford, 2022; Stanovsky et al., 2019). These tendencies suggest that AI translation is not neutral but shaped by the linguistic and cultural distribution of available corpora. As a result, communication mediated by AI may appear multilingual while still being guided by a limited set of interpretive frameworks. This phenomenon supports the argument that the disappearance of linguistic barriers does not eliminate inequality but transforms it into a subtler form.

Standardization Through Algorithmic Mediation

A further manifestation of the paradox is the gradual standardization of expression in AI-mediated communication. Because translation systems are optimized for clarity and probability, they tend to favor commonly occurring structures over culturally specific ones. This process can lead to what has been described as the normalization of language in digital environments, where diverse expressions are reshaped to fit patterns that are easier for machines to process (Couldry & Mejias, 2020). As communication increasingly passes through algorithmic systems, linguistic diversity may remain visible at the level of vocabulary while deeper interpretive differences are reduced. Users may feel that they understand each other because the translated text appears fluent, yet important cultural meanings may be absent. This condition exemplifies the TBP: the more efficient translation becomes, the more apparent the limits of machine interpretation.

From Linguistic Equality to Interpretive Imbalance

These examples suggest that AI translation does not simply remove barriers but reorganizes them. In earlier periods, misunderstanding resulted from the inability to translate words. In the AI-mediated environment, misunderstanding may arise even when translation is technically correct. The obstacle shifts from language itself to the interpretation of meaning. Recent discussions on the transformation of global linguistic order emphasize that communication is increasingly shaped by computational infrastructures rather than direct human interaction (H. N. Tran, 2026). Similar issues have been observed in intercultural communication settings in higher education, where shared language does not always guarantee mutual understanding, and structured interaction programs are required to bridge cultural differences (H.-N. Tran et al., 2026). Within such systems, languages may coexist at the surface level, but the interpretive logic guiding translation is determined by the architecture of the model. The result is a form of linguistic equality combined with interpretive imbalance, where all languages can be translated but not all meanings can be preserved. The TBP therefore becomes most visible in everyday communication, where technological success in translation reveals the continuing importance of cultural understanding.

Implications for Global Communication

The TBP has significant implications for the future of global communication. While artificial intelligence reduces linguistic barriers, it also changes the conditions under which understanding takes place. Communication is no longer mediated solely by human speakers but increasingly by algorithmic systems that filter, translate, and generate language. This shift raises questions about the nature of multilingual interaction, the preservation of cultural diversity, and the distribution of linguistic power in the digital age.

From Lingua Franca to Algorithmic Mediation

For centuries, global communication relied on the dominance of particular languages that functioned as *lingua francas*. Latin, French, and later English enabled interaction across regions while simultaneously reinforcing hierarchical structures of knowledge and authority (Crystal, 2003; Phillipson, 2018). The development of AI translation suggests a transition toward a different model, in which communication does not require a shared language but instead depends on technological mediation. In this environment, English may no longer be necessary as a spoken global standard, yet it continues to play a central role in the infrastructure of

translation systems. Large language models are trained primarily on high-resource languages, and English remains dominant in scientific publications, digital archives, and online content (Gao et al., 2024; W3Techs, 2025). As a result, even when users communicate in different languages, their interaction may still be shaped by patterns derived from English-language data. This shift represents a transformation rather than the disappearance of linguistic hierarchy. The TBP highlights this transition. Linguistic equality appears to increase at the level of communication, but interpretive authority may remain concentrated in the architecture of AI systems.

Efficiency Versus Cultural Depth

AI-mediated translation prioritizes efficiency, clarity, and speed. These qualities are valuable in many contexts, such as international collaboration, online education, and global business. However, communication that relies primarily on computational translation may sacrifice cultural nuance in order to achieve technical accuracy. Because machine translation is optimized for probabilistic correctness, expressions that depend on metaphor, historical reference, or social convention may be simplified or normalized (Couldry & Mejias, 2020). Research in bilingual cognition suggests that language diversity contributes to perspective-taking and cognitive flexibility (Bialystok, 2018). When translation systems reduce linguistic differences to standardized forms, the variety of ways in which people understand the world may also become less visible. The paradox therefore lies in the coexistence of greater accessibility with reduced interpretive richness. This tension does not imply that AI translation should be rejected, but it suggests that technological progress alone cannot guarantee meaningful communication.

Multilingualism in the Age of AI

One of the most frequently discussed benefits of AI translation is the possibility of true multilingual coexistence. Speakers can use their native language while relying on machines to bridge differences. This development may reduce the pressure to adopt a single dominant language, allowing more languages to remain in active use (UNESCO, 2025). At the same time, multilingual communication mediated by AI may become increasingly standardized. Because translation systems rely on large datasets, languages with limited digital presence are less accurately represented (Blodgett et al., 2020). This imbalance may lead to a situation in which linguistic diversity persists formally but is interpreted through a narrower set of semantic patterns. Such a condition reflects the TBP: diversity is preserved at the level of language yet reduced at the level of meaning.

Ethical Questions in AI-Mediated Language

The paradox also raises ethical concerns about the design and use of language technologies. If translation systems influence how meaning is interpreted, then decisions about data selection, model architecture, and evaluation criteria become questions of cultural representation. Scholars have described this issue as a form of algorithmic bias, in which dominant languages and worldviews are more strongly reflected in AI outputs (Buolamwini & Gebru, 2018; Crawford, 2022). Because large language models are trained on unevenly distributed data, they may reproduce existing inequalities even while appearing neutral. This problem becomes particularly significant for languages with limited digital resources, whose cultural expressions may be simplified or mistranslated. Ensuring fairness in multilingual AI therefore requires not only technical improvements but also attention to linguistic diversity and epistemic justice.

(Mohamed et al., 2020). The TBP suggests that the future of language technology must be evaluated not only in terms of accuracy but also in terms of its ability to preserve cultural meaning.

Toward Interpretive Awareness in Global Communication

The most important implication of the paradox is that understanding cannot be fully automated. Even if machines can translate words with high precision, human interpretation remains necessary to grasp the cultural context in which those words are used. Global communication in the AI era will therefore depend on a combination of technological tools and interpretive awareness. Rather than eliminating the need for cultural knowledge, AI translation may make such knowledge more important. Users must recognize that fluent translation does not always imply complete understanding. Awareness of this limitation can help prevent the illusion of comprehension that the TBP describes. In this sense, the future of global communication will not be defined solely by the ability to translate languages, but by the ability to preserve the diversity of meanings that those languages carry.

Conclusion

AI has brought humanity closer than ever to overcoming linguistic barriers. Yet the disappearance of linguistic obstacles does not automatically produce genuine understanding. This paper introduces the term *Trans-Babelism Paradox (TBP)* to describe the contradictory condition in which artificial intelligence enables universal translation while simultaneously weakening the cultural depth required for meaningful communication. The TBP highlights the coexistence of universal translation and cultural loss. Machines can reproduce words with remarkable precision, but they often fail to convey the experiences that give those words meaning. The challenge of the AI era is therefore not simply to translate more accurately, but to preserve cultural particularity within automated systems. If technology enables every language to be understood yet reduces every culture to the same interpretive framework, humanity may not have transcended Babel but rebuilt it in digital form.

Understanding the TBP is therefore essential for evaluating the role of artificial intelligence in multilingual societies. The challenge ahead is not only to improve the accuracy of translation systems, but to design technologies that respect the diversity of cultural expression. True transcendence of Babel will not be achieved when every word can be translated, but when communication across languages can preserve the differences that give those words meaning. In this sense, the paradox identified in this study complements recent theoretical discussions on the transformation of global linguistic order in the age of artificial intelligence, which suggest that language is increasingly mediated by computational infrastructures rather than direct human interaction (H. N. Tran, 2026).

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Contact email: tran@tokushima-u.ac.jp