Translating English Polysemous Words: A Systematic Literature Review

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Abstract

English polysemous words usually have semantically related meanings that are based on a central conceptual basis. Their translation is particularly challenging due to their semantic complexity, context dependency and cross-linguistic structural and cultural divergence. However, systematic research on this topic remains limited, particularly in resolving cross-linguistic ambiguity. The aim of this study is to investigate the main challenges in translating English polysemous words between different language pairs and to explore the strategies used by translators to resolve ambiguity. A systematic review of 397 publications indexed in the Scopus and Web of Science databases (as of 31 May 2025) was conducted, with 16 studies selected using the PRISMA framework. The findings show that: (1) translation challenges arise mainly from the interactions between linguistic structures and cultural semantics, especially in legal and medical contexts; (2) translators employ combined strategies such as contextual inference, semantic refinement, synonymous substitution, cultural adjustment, and technological assistance; (3) existing classification frameworks are often inadequate in practise and need to be adapted to specific genres and cultural contexts; (4) strategies are evolving towards integrated, context-sensitive and technology-driven models; (5) relevant research is increasingly interdisciplinary and incorporates insights from linguistics, computational linguistics and cognitive science. This review advances the understanding of English polysemous word translation and provides theoretical and practical insights for researchers and practitioners.

Keywords: English polysemous words, PRISMA framework, evidence synthesis, complexities in translation, strategic approaches in rendering meaning

1. Introduction

English polysemous words, defined as lexical items in English that carry multiple coexisting meanings (Sultanova, 2025), represent one of the most complex and dynamic features of the English semantic system. Their polysemy goes beyond mere semantic diversity and exhibits a high degree of context dependency, which often leads to ambiguity in translation (Muratovich, 2024; Skoufaki & Petrić, 2021; Degani & Tokowicz, 2010). As noted by Frenck-Mestre and Prince (1997), when a polysemous word comprises two or more meanings that just happen to be grouped in a single lexical form, it is often difficult to find an equivalent expression in the target language that can render all meanings simultaneously and accurately. Similarly, when studying English in comparison with Spanish, Dutch and German, Octavianus and Xenia (2025) found that many lexical items have multiple translation possibilities, suggesting that it is difficult to achieve one-to-one semantic equivalence. Several studies have shown that one-to-many word mappings frequently occur between English and other languages, including Spanish, Dutch and German (Aldhafeeri, 2022; Eddington & Tokowicz, 2015; Tokowicz et al. (2002) and Prior et al. (2007). Furthermore, Rodd, Gaskell and Marslen-Wilson (2002) claim that the meanings associated with a polysemous word are not necessarily based on a single underlying concept, but may instead exist independently of each other, which increases the uncertainty inherent in the translation process. Furthermore, Görlach (2003) emphasised that languages differ in the way they structure meaning, often relying on contrastive relations within semantic fields to construct lexical networks. As a result, discrepancies in semantic categorisation between languages often lead to conceptual mismatches, making polysemous words a particularly challenging and complicated issue in cross-linguistic translation research.

The challenges of translating English polysemous words go beyond lexical selection and include the precise interpretation of meaning in context. It has been shown that a single lexical item can have various interpretations based on grammatical, lexical, pragmatic and situational cues (Babaxanova & Daliyeva, 2025). According to Degani and Tokowicz (2010), vocabulary items with multiple translation equivalents that convey a similar meaning in a given context is generally more difficult to learn than items with unique equivalents for different meanings. This effect, which creates one-to-many relationships in a given context, is a major source of ambiguity in translating polysemous words. A relevant example is the English word iron, which can refer to both a chemical element and a household appliance, leaving the translator to determine the intended meaning from the context based on contextual cues alone (Timofeeva, Morozova, & Potapova, 2021; Sultanova, 2024). As observed by Corbett and Li (2021), translators must select the most contextually appropriate equivalent from a range of semantically related terms in the target language to preserve the original meaning.

Polysemy and ambiguity are widely recognised as contextual challenges in translation. Ambiguity, as defined by Kriedler (1998), refers to a linguistic expression that can lead to multiple interpretations, potentially clouding the intended message of the speaker or writer. Contextual clues, as described by Elena (2019), have a key function in resolving polysemy and ambiguity thus allowing translators to be able to distinguish meaning and avoid mistranslations. However, their conceptual framework is too general and does not adequately explore how cultural sensitivity affects the relationship between polysemy and ambiguity; for example, ambiguity arises in situations where it is not clear which meaning of a polysemous word is being used, leading to different possible meanings. Furthermore, ambiguity is a ubiquitous rhetorical or cultural device due to its openness and versatility, but its translation from one culture to another is a task with considerable difficulty. Although Nerlich and Clarke (2001) show how ambiguity creates aesthetic tension through the use of irony and metaphor, their work is limited to monolingual semantic ambiguity and does not apply to the communication of ambiguity in cross-linguistic settings. Given the relatively frequent occurrence of polysemous words in natural language and the interpretive problems they also pose in translation, a more nuanced examination of current translation approaches is not only warranted but long overdue.

Extensive research has repeatedly shown that ambiguity is widespread in the translation of English polysemous words in different language combinations. This phenomenon has been documented in combinations such as English–Dutch (Tokowicz et al., 2002; Degani & Tokowicz, 2010; Degani, Tseng, & Tokowicz, 2014), English–German (Eddington & Tokowicz, 2013) and English–Spanish (Prior et al., 2007; Prior, Kroll, & Macwhinney, 2013), English-Arabic (Al-Saudi, 2023) and English-Chinese (Tseng, Chang, & Tokowicz, 2014). A cross-linguistic comparison reveals a striking difference: while Tokowicz et al. (2002) found a 25% translation ambiguity rate for English-Dutch using a set of 562 English words, Tseng et al. (2014) applied the same word list in an English-Chinese context and found a much higher ambiguity rate of 65%. Overall, these results reveal the pervasive and complex nature of translation ambiguity when dealing with English polysemous words in cross-linguistic settings.

Existing research on polysemy has mainly focused on cognitive mechanisms in terminological systems (O'lmasov, 2025), psychological and linguistic models of polysemy processing (Haber & Poesio, 2024), word sense disambiguation methods in low-resource languages (Masethe. D, Masethe. A, Ojo, Giunchiglia, & Owolawi, 2024), the influence of polysemy on semantic classification and modelling trends (Sartika & Muliarta, 2025), and theoretical definitions and interdisciplinary modelling approaches (Pethö, 2001). As shown in Table 1, these reviews have made significant contributions to the intersection of cognitive semantics, sense modeling, and disambiguation strategies. However, apart from Haber and Poesio's (2024) hybrid model, which integrates linguistic and neuroscientific perspectives, and Masethe et al.'s (2024) meta-analysis of WSD techniques, there is still no systematic review on polysemy variation and disambiguation strategies in cross-linguistic translation contexts.

Table 1. Overview of existing systematic literature review studies

Author (year)	Objective	Study range	Findings
O'lmasov Sherbek A'zamovich (2025)	To develop a cognitive framework for distinguishing sense relations in terminological networks	1974–2024	It provided an analysis of the cognitive mechanisms driving polysemy in specialised terminology
Haber, J., & Poesio, M. (2024)	To propose a hybrid cognitive model of polysemy processing based on interdisciplinary evidence	Up to 2024	It provided evidence for a hybrid cognitive model of polysemy, showing variation across types and supporting a structured, hierarchical representation
Masethe et al. (2024)	To review existing WSD approaches and evaluate their performance across multilingual and multi-domain contexts	Up to 2024	It provided an overview of WSD methods and highlighted the limitations of unsupervised and deep learning approaches due to context and resource dependency
Sartika, M., & Muliarta, A. A. (2025)	To synthesise recent advances in semantic research and develop an integrated learning framework for education and NLP applications	2019-2024	It provided a comprehensive overview of semantic research trends, highlighting the role of polysemy, the semantic web, and knowledge management in enhancing educational and NLP systems
Pethö, G. (2001)	To clarify current research on polysemy and compare theoretical approaches to its definition and modeling	1980-2000	It provided an overview of polysemy as a structured, predictable phenomenon in language, arguing for multiple models to fully account for its complexity

Building on this body of research, this review addresses two key questions: (1) What are the main challenges faced when translating English polysemous words across different language pairs? (2) How do translators deal with ambiguity by applying specific translation strategies in multilingual settings? The aim of this literature review is to provide a comprehensive integration of existing scholarship for the provision of specific strategic advice for translators and to provide a theoretical foundation for future research on polysemous English words in translation contexts.

2. Methodology

This study undertakes a focused review of the relevant literature, which is defined as a systematic assessment, amalgamation, synthesis

and summarisation of related research findings (Wang, Ang, & Halim, 2020). This process takes place in a series of phases: 2.1 Search strategy, 2.2 Study selection, 2.3 Data selection and 2.4 Selection bias.

2.1 Search Strategy

For this study, relevant literature was searched from two scientific online databases, namely Scopus and Web of Science (WoS). Scopus is known as one of the largest databases containing a comprehensive collection of peer-reviewed journal articles in the field of social sciences and related disciplines (Steinhardt et al., 2017). In contrast, WoS is considered the oldest and most widely used authoritative database of academic papers and citations worldwide (Birkle et al., 2020). The use of the two databases was justified given the complementary nature of the disciplinary areas they cover. When used together, the two databases provide a broader and more credible source for academic research (Burnham, 2006). To increase the depth and specificity of the literature review, the snowballing technique was also used, which involved a systematic search of the reference lists of the initially accessed papers to find further related studies to complement the initial database search.

The search process began with the use of the "Advanced Document Search" function in the WoS and Scopus databases, where specific search string queries were entered into the search system to find literature relevant to the research topic. When selecting keywords in the search strings, the study used various synonyms for "polysemous words"," including English equivalents such as "polysemy" and "ambiguous words". Polysemous words refer to lexical items that are semantically ambiguous but have the same spelling. They generally include several interrelated meanings for instance, "paper" as in academic paper and gift-wrapping paper. Most ambiguous words in natural language are polysemous rather than homonymous, which involve unrelated meanings despite formal similarity (Klein & Murphy, 2001). Accordingly, the search was conducted using the title, abstract and keywords fields as follows:

Search string for Scopus:

TITLE-ABS-KEY (("polysemous term*" OR "polysemous word*" OR "ambiguous term*" OR "ambiguous word*" OR "polysem*") AND translation AND English)

Search string for WoS:

TS=(("polysemous term*" OR "polysemous word*" OR "ambiguous term*" OR "ambiguous word*" OR "polysem*") AND translation AND English)

2.2 Study Selection

Given the comprehensive nature of the search strategy employed in this systematic review, all relevant studies published up to 31 May 2025 were considered for inclusion. During the literature management phase, duplicate entries were removed using Rayyan, a tool specifically designed for managing references in systematic reviews. To determine the final set of studies to be included, a two-stage screening was performed. In the first stage, irrelevant articles were removed based on their titles and abstracts. Subsequently, the remaining articles were subjected to a full-text review to assess their eligibility in more detail. The aim of this screening process was to refine the pool of included studies to ensure that the review process remained both manageable and methodologically rigorous (Okoli, 2015).

The inclusion and exclusion standards were formulated based on the boundaries set by the research questions, and are presented in detail in Table 2.

Table 2. Inclusion and exclusion criteria

No.	Criteria	Inclusion	Exclusion	Justification
1	Language	English	All languages except English	To guarantee precise understanding and presentation of articles within the international scholarly framework
2	Scope	Peer-reviewed academic journal articles	Reviews, book chapters, conference proceedings, editorials, brief surveys, non-peer-reviewed, and unpublished works	Journal articles exhibit greater consistency in production compared to other materials like book chapters and reports
3	Length	Full-text papers available for access and retrieval	Articles presenting only abstracts or partial content	To enable thorough assessment, ensure full data retrieval, and prevent bias due to incomplete information
4	Content	Papers with complete information elements	Articles lacking abstracts, author details, keywords, references, or other critical elements	To achieve exhaustive data analysis, uphold consistency, and improve the robustness and credibility of results
5	Focus	Studies centrally addressing English polysemous words in language pairs	Articles that peripherally mention polysemous word or translation or lack English language study	To emphasise detailed, pertinent analyses that clarify how English polysemous words are translated

2.3 Data Selection

To systematically identify translation strategies applied to English polysemous terms, this study adopted the PRISMA approach originally

proposed by Page et al. (2021) as the basis for its research design. An initial search yielded 397 entries, 104 from the Web of Science (WoS) and 293 from Scopus. After removing 92 duplicates, 305 entries were subjected to screening based on the titles, keywords and abstracts, taking into account predefined inclusion and exclusion criteria. In cases where the abstracts were not sufficient for an assessment, the corresponding full texts were used for a detailed review.

After a thorough full-text review, 277 studies were excluded for various reasons. For example, although the study by Zhang, Yang, Liang and Chen (2022) related to the acquisition of meaning of English polysemous words in the context of second language acquisition, it was not directly related to translation and was therefore considered irrelevant. Similarly, a study by Boada et al. (2013) investigated this phenomenon by looking at the translation of Catalan polysemous words into Spanish; the study looked at translation but did not provide an in-depth analysis of the specific challenges of translating English polysemous expressions. Degani and Goldberg (2019) cited both "polysemy" and "translation" as keywords, but the full text did not address the core issues of translating polysemous words in depth. Salhi, H. (2013) conducted a comparative analysis of polysemy translation, but the study did not address the specific difficulties encountered during the translation process, nor did it propose concrete strategies for solving them. In addition, 13 studies focussed mainly on the translation of polysemous words from other languages into English. Although these studies were tangentially related to the topic, their thematic focus was insufficient for the aims of this study. As a result, only 15 articles met the inclusion criteria. One additional relevant study was identified through a snowballing approach, bringing the total number of studies included in the final systematic review to 16. The process of data extraction and study selection is shown in Figure 1.
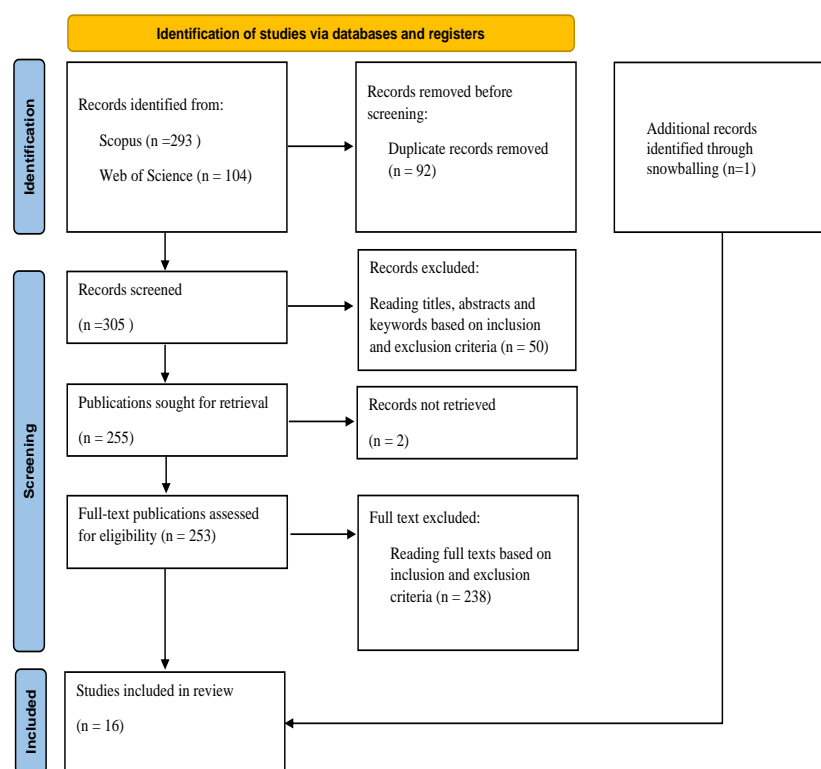

Figure 1. Flow chart of study inclusion process adapted from the PRISMA 2020 diagram

2.4 Selection Bias

In response to the research objectives set out in this review, the findings have been categorised into four thematic areas: Author citations, language pairs, translation challenges, and translation strategies. Specific information on the translation challenges and strategies related to English polysemous words was systematically extracted and recorded in an Excel spreadsheet.

To ensure that the selected studies examined in this review strictly adhered to the predefined selection criteria, a second reviewer independently conducted a parallel database search and followed the same inclusion protocol. Both reviewers assessed the study titles, abstracts and complete documents from the selected works in accordance with the established criteria. The inter-rater reliability coefficient was calculated at 0.89, indicating a high degree of agreement between the reviewers.

Disagreements that arose during the selection process were resolved through collaborative discussion. For example, one point of contention concerned the question of whether studies dealing with the implications of polysemy (hereafter referred to as Polysemous Implication Research), should be included in the review. After careful consideration, both reviewers concluded that while such studies provide valuable insights into the semantic analysis of polysemy at the linguistic level, they fall short of addressing practical methods for

disambiguating English polysemous expressions in translation. Therefore, this category of research was ultimately excluded from the present review.

3. Results

The studies included in this review adopt a multilingual translation perspective and reflect the current scholarly landscape of multidimensional inquiry into the translation of English polysemous words. In order to present the core content of these studies in a more structured and accessible manner, Table 3 provides a comprehensive overview of the selected studies, highlighting the authorship and year of publication, the language combinations involved, key translation difficulties encountered, and the corresponding strategies adopted. This table should serve as a useful reference for future scholarly work and provide a better insight into the complex dynamics of translating English polysemous words and the range of methods employed to overcome such challenges.

Table 3. Challenges and translation strategies on translating English polysemous words

Author citation	Language Pair	Challenges	Translation Strategies
Timofeeva, L., Morozova, M., & Potapova, T. (2021)	English to Russian	Structural mismatches across languages; equivalence of legal terms and concepts; fixed expressions in legal discourse	Cultural adaptation; recomposition; functional equivalence; simplification and explicitation
S. Chauhan, P. Daniel, S. Saxena, & A. Sharma (2022)	English to Hindi	Syntactic divergence; lack of parallel corpus training; absence of semantic equivalence	Cross-lingual sense-to-word embeddings; integrated language models; denoising autoencoders
Corbett, J., & Li, L. (2021)	English to Portuguese and Chinese	Complex pragmatic shifts; metaphorical meaning mismatch; context-driven interpretation; managing semantic variability	Semantic field comparison; semantic compensation; semantic restructuring; component mapping; cultural projection; rhetorical category transfer
Akhobadze, B. (2018)	English to Georgian	Neologism; high ambiguity levels; grammatical mismatch and category shift; limitations of machine translation; excessive foreignisation of terminology	Coexistence of transliteration and literal translation; semantic origin tracing; context-dependent disambiguation; localisation substitution; semantic systematisation
Lefever, E., & Hoste, V. (2014)	English to French, German, Spanish, Italian, and Dutch	Manual-intensive word sense annotation; granularity ambiguity in distinctions; fuzzy equivalence in cross-lingual translation; frequent use of compounds and vague renderings; uneven distribution of polysemous words	Translation perception via parallel corpora; automatic verb alignment annotation; contextual feature composition; unsupervised clustering-based perception
Zolfaghar Kondori, Z., & Mosavi Miangah, T. (2015)	English to Persian	Insufficient contextual cues; corpus dependency issues; adjective polysemy in English	Dominant sense selection; disambiguation algorithm design; statistical evaluation methods
G. Zhou, Y. Chen, Y. Feng, & R. Zhou (2019)	English to Chinese	Translation ambiguity; Interference from semantic similarity; bias toward dominant word senses; high context dependency; learner proficiency disparities	Translation pair selection strategies; translation dominance preference; context-driven translation decisions; proficiency-based adaptation
S. Rawat, K. Kalambe, G. Kawade, & N. Korde (2019)	English to Hindi	Semantic vagueness; high context dependency; imbalanced training data; poor robustness to out-of-vocabulary terms; inadequate training resources	Memory-based retrieval prioritisation; feature-based sense classification; supervised disambiguation strategies; context window inference strategies
Frinculescu, I. C. . (2014)	English to Romanian	High context dependency; specialised nature of medical terminology; lack of cultural adaptation; many-to-many lexical mappings	Contrastive lexicology; corpus-based analysis; contextual interpretation
Degani, T., & Tokowicz, N. (2010)	English to Dutch	Semantic ambiguity; many-to-many lexical mappings	Repetition of ambiguous elements; definition refinement
Williams, I. A. (2009)	English to Spanish	Absence of semantic equivalence	High-frequency sense selection; synonym substitution; contextual meaning analysis
Domingo, E., & Roxas, R. E. (2006)	English to Tagalog	Multiple mappings in target language; sparse lexical disambiguation cues;	Mixed sense-to-word and word-to-sense translation; semantic similarity judgment;

		absence of morphological analysis	word co-occurrence frequency evaluation; translation preference modeling
Eddington, C. M., & Tokowicz, N. (2013)	English to German	High context dependency; dominance-subordination mismatch; translation ambiguity	Contextual priming; dominant translation strategy; semantic similarity comparison
Laviosa, S. (2006)	English to Italian	Ambiguity in English borrowings; cross-linguistic grammatical and semantic differences; absence of morphological analysis	Data-driven learning strategies; corpus-assisted analysis; cross-linguistic contrast strategies
Liu, P. Y., Zhao, T. J., Yang, M. Y., & Li, Z. (2008)	English to Chinese	Corpus imbalance; noise in bilingual alignment; polysemy disambiguation	Pseudo-equivalence construction; unsupervised learning strategies; HowNet-based semantic mapping
Qin, G. (2019)	English to Chinese	Emotional intensity in expressions; rich derivational extensions; highly variable word order; challenges in logical and semantic clarity	Contrastive linguistic method; contextual derivation method; word selection method; additive and subtractive processing; local reordering and semantic extension

In order to further validate the practical significance of the findings of this study in the context of English translation, selected examples from specific corpora are used in this paper. These examples, shown in Table 4, have been selected to illustrate key aspects such as the identification of semantic divergences, the selection of translation strategies and their influence on the translation outcome. The cases highlighted in Table 4 cover translation scenarios for several language pairs and provide a direct insight into the variations in meaning of English polysemous words depending on contextual factors and the way these variations influence the rendering in the target language. In particular, the inherent ambiguity of English polysemous words poses a particular challenge for translation and requires translators to rely heavily on contextual interpretation and contrastive linguistics to find the translation strategy that best fits the given context. These strategic decisions, in turn, have a direct impact on the semantic accuracy and overall acceptability of the translated text. By presenting the considerations underlying these translation decisions, Table 4 provides a practical dimension to the theoretical conclusions previously presented in Table 3, thus increasing both the depth and reliability of the study's evaluative framework.

Table 4. Examples and findings of translating English polysemous words

Language Pair	Example	Findings
English to Russian	The term "контракт" is typically used to denote a "contract." When describing certain forms of cooperation, "соглашение" may be preferred, aligning more closely with the English term "agreement."	Translators must understand the legal system differences between English and Russian and adjust their translation strategies based on context and legal framework.
English to Hindi	In English sentences mentioning "eating dates," the correct Hindi translation is "खजूर" (dates as fruit). When referring to a specific calendar day, the appropriate translation is "तारीख."	Unsupervised machine translation methods, combining CLSWE, language models, and denoising autoencoders, have significantly improved evaluation scores such as BLEU and METEOR in English–Hindi translation.
English to Georgian	The English word "deposit" may be rendered into Georgian as დეპოზიტი (a transliteration), or through native equivalents such as ანაბარი or შენატანი, often combining both forms to retain semantic clarity and local familiarity.	Terminology translation requires both linguistic support and technological tools.
English to Persian	When "high" refers to physical elevation, it is translated into Persian as "بلند" (bāland). When indicating importance, the suitable Persian equivalent is "مهم" (mohem).	Disambiguation algorithms show high similarity to human translations when handling polysemous adjectives.
English to Dutch	The noun "change" in English typically refers to either "coins" or "modification," which are translated into Dutch as "wisselgeld" and "verandering" accordingly.	Vocabulary with formal ambiguity poses more learning challenges compared to clearly defined and unambiguous terms.
English to German	The English adjective "shy" has two German equivalents. The dominant translation, "schüchtern," tends to yield faster and superior response precision over the subordinate variant, "scheu."	Translating ambiguous words involves longer response times and lower accuracy; relevant priming cues can facilitate recognition, with dominant translations yielding faster and more accurate responses.

4. Discussion

This study explores the translation of English polysemous words from five perspectives, aiming to provide theoretical support for multilingual translation practice and to anticipate the developmental potential of English polysemous word translation within

interdisciplinary research.

4.1 The Intertwined Influence of Structural Differences and Cultural Semantics

When translating English polysemous words, the difficulties encountered by the language pairs have both significant differences and common features. First, from the perspective of linguistic structure, the main challenges in translating polysemous words between English and languages such as Chinese, Russian and Georgian arise primarily from differences in lexical systems and grammatical constructions. For example, Timofeeva et al. (2021) highlight that achieving equivalence in legal terminology is extremely complex in English-Russian contract translation, as the Russian legal system is fundamentally different from English. Consequently, the selection of terms must be strictly based on the legal context, and the syntactic differences often require sentence restructuring in order to maintain functional equivalence. Akhobadze (2018) points out that the determination of historical semantic contexts has a great influence on the selection of meanings when translating English technical terms into Georgian and therefore localisation of these terms is necessary. This means that the different mechanisms of semantic representation that exist in different languages cause complications in translation at the level of polysemy. For this reason, the similarities between language pairs in terms of their lexical structure and syntactic features pose great challenges in translating polysemous words from English.

Cultural differences become an insurmountable obstacle to translation. Corbett and Li's (2021) analysis focuses on the Portuguese and Chinese versions of *The Call of the Wild*, where they find that the English word 'wild' is not only interpreted literally, but also contains several cultural metaphors. Translators have to deconstruct and reconstruct elements of cultural semantics when translating into Portuguese and Chinese; significantly, in the Chinese translation, the four-character idiom "暴跳如雷" ("fly into a violent rage") is used to express an emotional connotation. These methods of cultural semantic projection reveal an increased sensitivity of translators to cultural nuances. In a similar study, Qin (2019) highlights that the translation of polysemous English words into Chinese requires intracultural semantic adjustments to maintain translation quality through strategies such as contextual derivation in addition to addition or omission and to achieve successful cultural knowledge transfer. Taken together, these studies confirm that cultural differences not only affect semantic mapping at the level of individual words in polysemy, but also require flexible strategic options from translators.

Furthermore, the reliance on and effectiveness of disambiguation methods for polysemous English lexemes vary across different target languages. Lefever and Hoste (2014) show a similar phenomenon for French, German and Spanish by applying an automatic word-alignment method in word-for-word mode, using multilingual parallel corpora in which the lexical variety of the translation acts as automatic semantic disambiguation signals. This method provides a standard benchmark for low-resource languages. Chauhan, Daniel, Saxena and Sharma (2022), on the other hand, offer a contextual word translation method that uses a denoising autoencoder method tailored to highly structured languages such as Hindi. This method combines deep learning architectures with contextual examination to significantly improve the accuracy of polysemous word selection in machine translation, demonstrating the peculiar strengths of technology-based methods in low-resource settings. Furthermore, Zhou et al. (2019) empirically demonstrate in an English-Chinese bilingual settings that polysemous words with high semantic similarity are highly reliant on contextual density, even if they are simultaneously conditioned by the translators' linguistic competence, thus shedding light on the significant cognitive contribution to dealing with translation ambiguity.

In certain cases, the difficulties of translating polysemous words in medical and legal contexts are particularly evident. Frinculescu (2014) analyses the Romanian equivalent of the English word "pattern" and shows that the choice of different meanings in the context of specialised environments requires a series of lexical choices supported by evidence from specialised sources. Timofeeva et al. (2021) point out that the translation of contracts from English into Russian requires the integration of legal language, not only for reasons of semantic precision, but also for reasons of functionality in relation to the original legal document, where legal and cultural differences become major challenges. Williams (2009) provides a thorough analysis of the polysemous Spanish biomedical verb "report" and emphasises that translation solutions need to be sensitive to the various contexts, for instance, institutional settings, communities and laboratory scenarios, highlighting the impact of domain-specific factors on translation challenges.

4.2 Coordinated Application of Multiple Strategies

A comprehensive survey covering sixteen studies on translation methods reveals that translation methods can be divided into five main categories: contextual inference, semantic refinement, synonym substitution, cultural adjustment and technological assistance.

First, contextual inference methods highlight the effectiveness of using near-textual context to infer particular meanings in relation to polysemous words. For example, Chauhan et al. (2022) proposed an unsupervised English-to-Hindi machine translation system that effectively uses word sense disambiguation in combination with language modelling to resolve the ambiguities in translating polysemous words into the target language. Similarly, Zhou et al. (2019) also highlight the crucial contribution of semantically enriched context in resolving the meanings of polysemous words in English-Chinese bilingual contexts. In addition, Domingo and Roxas (2006) used syntactic relations to enable automatic disambiguation of target words in Tagalog translations, demonstrating the broad applicability of context-based methods across various languages.

Second, the subsequent step is to clarify the meaning of polysemous terms from the source language so that they can be rendered effectively in the translated output, either through elaboration, amplification, or textual reformulation. Corbett and Li (2021) utilised the application of a historical English thesaurus together with semantic compensation and rhetorical transfer to obtain accurate translations of the polysemous words "*wild*" in *The Call of the Wild* into Portuguese and Chinese. In the same context, Qin (2019) proposed a

combination of aesthetic value and accuracy of English-Chinese literary translations utilising context-driven adjustments along with controlled additions or subtractions. In the medical context, Frinculescu (2014) employed corpus-based studies to select the most appropriate technical terms for the polysemous word "pattern" to reflect the application of the semantic refinement method within technical texts.

Third, there is the synonym substitution approach, in which polysemous source words are replaced by the most appropriate synonyms or collocations of the target language in order to effectively convey the intended meaning. Williams (2009), in a comparative study of the English biomedical verb "report" translated into Spanish, illustrated that translators tend to choose different synonyms based on specific contextual conditions and gave an example of operational flexibility in synonym substitution. Degani and Tokowicz (2010) used cognitive experiments to show that the dominant meaning of polysemous words is more likely to be accepted by translators than the subordinate meaning, providing a cognitive orientation that serves as a basis for synonym substitution methods.

Fourth, cultural adjustment measures reduce the impact of cultural differences on the translation of polysemous words. Timofeeva et al. (2021) state that English-Russian translation of contract terms requires not only language transfer but also compatibility with the cultural background of the target system, which is why functional equivalence measures are taken together with cultural adaptation to legitimise the result and still be effective in the target translation. Akhobadze (2018), who studied Georgian versions of translations of technical English texts, recommends localisation of words along with tracing semantic origins with the aim of effectively preventing a clash of cultures. Corbett and Li (2021) also state that semantic projection together with cultural metaphors is a major composition in cross-cultural translation of polysemous words.

Fifth, technological assistance strategies are increasingly pivotal in resolving polysemy ambiguity. Lefever and Hoste (2014) employed automatic word alignment techniques on multilingual parallel corpora to replace manual annotation for efficient word sense disambiguation applicable to French, German, Spanish and other languages. Liu, Zhao, Yang, and Li (2008) introduced an unsupervised disambiguation model based on equivalent pseudo-translation terms and constructed classifiers from monosemous target language word sets to effectively reduce noise and improve the accuracy of English-Chinese translation. Zolfaghar and Mosavi (2015) utilised corpus-based statistical methods to disambiguate Persian polysemous adjectives, demonstrating the promise of technology-driven strategies for low-resource language translation.

Despite the strengths of these strategies, their cross-linguistic applicability varies considerably. Context-driven and technology-assisted approaches rely heavily on extensive corpora and contextual data and are therefore more suitable for resource-rich or structurally similar language pairs such as English-Chinese or English-French (Chauhan et al., 2022; Lefever and Hoste, 2014). In the case of structurally distant or low-resource languages such as English-Hindi or English-Georgian, on the other hand, cultural adaptation and semantic fine-tuning must be combined (Akhobadze, 2018; Timofeeva et al., 2021). Although synonymous substitution is very effective for technical texts (Williams, 2009), it may prove insufficient for encoding complicated metaphors in literary or culturally indeterminate texts (Corbett and Li, 2021). For the above reasons, the simultaneous use of a collection of solutions in translation practise appears to be a dynamic decision-making process. Qin (2019) emphasises that translators should adapt their methods based on the text type, the context of the target reader and the characteristics of the language pair. This principle is demonstrated by Rawat et al. (2019) in a decision tree structure developed for word sense discrimination, exemplifying the simultaneous use of different methods.

4.3 Practical Limitations of Classification Strategies

Although theoretical polysemy classification models for English polysemous words have been constructed for dividing translation strategies, their practical application also remains limited, sometimes even more so when it comes to specialised fields and texts with emotional content. For example, Timofeeva et al. (2021) point out that while the norms of "terminological equivalence" and "functional equivalence" provide general guidance for English-Russian translation of contracts, it is precisely the differences between English and Russian legislation that necessitate reshuffling syntax or rephrasing stories in the legal context, rather than adhering strictly the prevailing categories. Frinculescu (2014), who translated the polysemy of "pattern" from Romanian medical texts, also employed a specialist corpus analysis with contextual judgement, demonstrating that even formalised classification methods need to be applied flexibly in relation to polysemy in highly specialised fields such as medicine.

Another disadvantage of classification methods is their poor ability to adapt to cross-cultural metaphors and diachronic semantic changes. Corbett and Li (2021), in an empirical analysis of the Portuguese and Chinese versions of *The Call of the Wild* focusing on words such as 'rage' and 'wild'," expose the prevalent tendency of classification to overlook the significant influence of diachronic semantic changes and cultural symbolic differences on the translation strategy. To reverse this tendency, they proposed "semantic mapping" and "component alignment" instead of the typical "semantic reconstruction methods". This adaptation reflects the fact that the classification patterns need to be fine-tuned by taking into account the text type, the rhetorical personality and the pragmatic order of the target culture itself. Furthermore, Qin (2019) argues for literary incorporation in favour of context-oriented and additive/omissive methods in translation, thus underpinning the need for enrichment of existing methods and their integration in textual terms.

Although the technology-driven translation policy shows an optimised level of efficiency, it is an expression of adaptation bottlenecks within the existing strategic structures. Chauhan et al. (2022) propose an embedding scheme for a CLSWE with a denoising autoencoder gaining traction with polysemous words in unsupervised environments, but hypothesise that the transferability of such strategies to language pairs for grammatically highly diverse languages is limited. Lefever and Hoste (2014) performed automatic sense clustering and

alignment with multilingual parallel corpora to replace manual annotation, which made the models more efficient; however, their efforts were primarily applied to Indo-European languages, with negligible extrapolation to non-European languages with Hindi or Chinese as pivot languages (see Liu et al., 2008; Rawat et al., 2019). Ironically, the 'creative' value of the technological measures reveals their inadequacy in terms of universality and adaptability within the structure.

Customised translation strategies simultaneously reward the shortcomings of classification schemes with an increase. For example, Akhobadze (2018), who deals with the translation of English technical terms into Georgian, proposed methods of "semantic background tracing" and "terminological structuring" that build a translation logic from the historical semantic paths of the target language lexemes — a solution beyond conventional classifications. On a similar theme, Domingo and Roxas (2006) proposed a word-to-word mapping mechanism involving the optimisation of target words using syntactic co-occurrence frequencies for fine-grained lexical decision. This approach addresses possible shortcomings of linear classification with an implied future taxonomy involving more "hybrid" or "dynamic selection" factors. Other examples of this effect include Laviosa (2006), who promotes data-driven translation learning that supports learners in using corpora to form judgements about polysemous loanword translations, with one example showing the increasing need for flexibility in strategic systems in translation practise.

Although these innovations represent incremental extensions and refinements of classification taxonomies, even studies of individualised methods do not crystallise as universally shared standards or translatable templates due to limitations of the corpus, biases in sample selection and questionable assessment standards. For example, the innovation of Corbett and Li (2021) is not generalisable due to its focus on a single novel and a single language pair (Portuguese-Chinese); the corresponding pseudo-translation equivalence model of Liu et al. (2008) fails despite its new theoretical orientation due to a series of polysemic-Dutch distributed unbalanced corpora with semi-semantic corpora edges. Also contradictory is the comment by Timofeeva et al. (2021) that innovation in legal contract translation methods routinely relies on personal understanding rather than formalised, number-based models. Thus, while individualised methods have better adaptability to real-world application scenarios, their weaknesses point to the need for future classification models with a focus on modelling and experimental validation with a range of language pairs using data-driven methods.

4.4 The Multidirectional and Dynamic Evolution of Strategies

In practise and in translation studies, three different solutions are distinguished for polysemous words from English: context-sensitive disambiguation, cultural-semantic reconciliation and practical adaptation to the target culture. These paths reflect the general interest in interlingual semantic patterns, cultural viability and pragmatic functionality. In legal studies, Timofeeva et al. (2021) propose to intertwine terminological equivalence with a solution strategy for functional equivalence when translating English-Russian contract texts. For example, the English word "contract" is translated with "договор" or "контракт" in a context-sensitive manner, which means an adaptation to terminological conventions within the target system and not a slavish adherence to the source language. This means prioritising the pragmatic adaptability of the translation solution with a tendency towards pragmatically motivated strategic fine-tuning of the functional unit.

The literary translation focuses on the multidimensionality of the semantic structure and the implicit communication of the cultural connotation. Corbett and Li (2021) have compared a number of translations of *The Call of the Wild* and identified a pattern for dealing with polysemous words such as "wild", which consists of deconstructing and reconstructing compound meanings (e.g., between "野性" (wild nature) and "荒野" (wilderness) for "wild" chosen in the Chinese translators' versions), exemplified by the translation of "a gust of rage" into "一阵狂怒" ("a sudden burst of fury"). These approaches show an increasing tendency towards the construction and reorganisation of compound semantics in the more recent translation of polysemous words.

In highly technical texts and terminologies, the development of strategy concentrates even more on the systematisation of structure and localisation. According to Akhobadze (2018), English-Georgian terminology translation is possible with phonetic transcription or with semantic equivalence for terms such as "deposit" or "brainstorming", where context dictates the choice and localisation of term databases is increasingly supported. This is a trend that continues in the direction of simultaneous storage of terms in archives and contextual fine-tuning, with translation policies tending towards equal treatment of different semantic situations and adaptation to local acceptability. In the same way, Williams (2009) proposes a subtle treatment of the polysemous Spanish verb "report"," with translation variants — from "informar" " to "notificar" - referring to functional domain boundaries and high-level semantic contextualisation.

At the same time, insights from cognitive science and second language acquisition have created an empirical basis for shaping translation strategies. Studies by Zhou and colleagues (2019) and Eddington and Tokowicz (2013), who investigated English–Chinese and English–German language pairs respectively, show that the competence of translators in dealing with polysemous terms is closely linked to the restrictiveness of contextual cues and the existence of a predominant translation choice. Targeted approaches, such as prioritising the semantically dominant interpretation and facilitating decisions in tightly constrained contexts, have steered translation models towards more intelligent, context-sensitive processing enriched by cognitive prominence. Similar patterns are reflected in the work of Rawat et al. (2019), who employed CART decision tree modelling to disambiguate polysemous words between English and Hindi, resulting in a significant improvement in translation accuracy when contextual cues were taken into account. Furthermore, the integration of machine translation technology and automation is leading translation strategies to rely more heavily on corpus data and syntactic restructuring. Chauhan et al. (2022) have presented an unsupervised translation system with contextual lexical-semantic word embedding (CLSWE) together with a denoising autoencoder for context-sensitive translation of suspicious words such as "bat" and "bank" assuming

unannotated corpora. Lefever and Hoste (2014) also utilised multilingual parallel corpora for the automatic identification of individual senses, supporting the fact that "translation itself serves disambiguation"," i.e. that variations between translated forms signify semantic boundaries. This strategy, which makes semantic interpretations based on translation results, drives a new development towards less formal changes, but towards modelling the semantic distribution within the translation of polysemous words.

4.5 Interdisciplinary Perspectives and Strategic Deepening

The translation of English polysemous words as one of the core topics of language processing goes far beyond the conventional paradigms of translation studies and encompasses ideas from linguistics, computational linguistics, psycholinguistics and other fields. Based on linguistic and translation studies variables, Timofeeva et al. (2021) reveal the complexity of English-Russian legal translation, including terminological equivalence, syntactic reconstruction and cultural legal framework adaptation. Corbett and Li (2021) incorporate historical semantics into literary translation by reconstructing the diachronic semantic structures of polysemous words using a historical English thesaurus, demonstrating how theoretical linguistics supports the selection of translation strategies. Within specialised domains, Frinculescu (2014) uses comparative medical corpora to show the cross-linguistic semantic stratification and register shifts of terms such as 'pattern'," highlighting the practical guidance offered by domain linguistics and terminology theory in translation practise.

In the meantime, computational linguistic approaches are changing the ways in which strategies for translating polysemous words are implemented. Chauhan et al. (2022) and Liu et al. (2008) independently propose unsupervised disambiguation methods based on embedding models and equivalent pseudo-translation models, respectively. These studies go beyond the reliance on manual annotations and semantic lexicons by attempting to automatically derive the logic of meaning selection and emphasise the pioneering role of artificial intelligence and natural language processing technologies in resolving translation ambiguity. Lefever and Hoste (2014) construct semantics-aware systems through multilingual alignment of parallel corpora and advocate cross-linguistic comparison as a natural annotation mechanism for word sense disambiguation. Their corpus-driven models integrate co-occurrence patterns with contextual distribution features, providing a new direction for the generalisation of computational models. This research is an example of a profound fusion of linguistic methods and technical means and strengthens the empirical foundation of translation strategies.

Cognitive and psycholinguistic perspectives shed further light on the human processing mechanisms underlying the choice of translation strategy. Zhou et al. (2019) used a $2\times2\times2$ factorial design to investigate how second language skill, contextual constraints and semantic closeness affect the processing of polysemous terms. The findings led to suggestions for strategies such as "prioritising dominant translations" and "adjusting to language proficiency," which embeds translation decisions in a cognitive framework. Eddington and Tokowicz (2013) use translation recognition tasks to show the significant influence of contextual guidance on the accuracy of translating semantically ambiguous words. These studies not only reveal the cognitive mechanisms of semantic ambiguity, but also offer insights for translation pedagogy and the design of intelligent translation system interfaces. Laviosa (2006) also integrates data-driven learning methods into translation education and advocates corpus-based, comparative teaching to help learners recognise polysemy in authentic contexts, illustrating the synergy between educational psychology and translation practise.

Despite the rich results of interdisciplinary integration, notable shortcomings remain. First, corpus limitations are widespread; for example, the corpora used by Williams (2009) and Degani and Tokowicz (2010) are domain-specific or of limited size, which limits the generalisability of their conclusions. Second, Indo-European languages are strongly favoured in the selection of language pairs, while languages outside the Indo-European family, such as Hindi, Georgian or Chinese, are studied less thoroughly, as shown by the studies of Akhobadze (2018) and Rawat et al. (2019). Therefore, future research may expand along multiple trajectories. For example, cross-linguistic big data analysis should be expanded, especially for underrepresented language pairs and cross-cultural texts, to facilitate strategy extraction and statistical modelling to improve the inclusivity and adaptability of translation strategy systems. In addition, interdisciplinary empirical research using neuroimaging, eye-tracking and similar methods should be promoted to observe the semantic processing of translators in order to achieve high-precision modelling of the interaction between cognitive mechanisms and strategy selection.

5. Conclusion

The aim of this review is to investigate the main challenges faced by different language pairs when translating English polysemous words and the strategies used by translators to resolve ambiguities. The findings show that the difficulties in translating English polysemous words are primarily due to the dual influence of structural linguistic differences and culturally loaded semantics. Language pairs such as English–Chinese, English–Russian and English–Portuguese show the extent to which the disruption of sense selection is particularly noticeable through differences in the lexical system, the grammatical system and the cultural context. Furthermore, translators opt for a coordinated multi-strategy approach to tackle these fine but subtle ambiguity concerns using five general approaches: contextual inference, semantic refinement, synonymous substitution, cultural adjustment and technological assistance. The degree of translation dependency and the effectiveness of the methods differ considerably between language pairs. Furthermore, while the general categories provide a broad overview of translation methods, these tend to adapt to the negotiated linguistic and contextual details on a case-by-case basis. Classical taxonomies thus have a limited scope with dynamic adaptability. The predisposition for general English polysemous word translation methods is therefore a shift away from a static classification towards a multidirectional orientation towards context, indicating an iterative endeavour of translation application to enable a dynamic balance between linguistic variation and cultural complexity.

This review serves as a key reference for translators in resolving ambiguity when translating English polysemous words into other

language pairs. Depending on the five synthesised mainstream strategies with their corresponding feasible contexts, translators can choose methods adaptively for specific language pairs, text types and contextual situations, maximising the accuracy and acceptability of the translation. For translation scholars working on the translation of polysemous words from English, the review also provides systematic guidance. Through this synthesis, scholars are reminded of the fact that structural variations and cultural factors in language pairs are the most important factors in strategy choice. The choice of strategy may no longer be determined by text type, but by the nature of semantic ambiguity, the extent of contextual dependency, and the cognitive characteristics of translators, thus advancing the discipline towards multidimensionality and multilingualism in research.

There are several limitations in this review. First, only peer-reviewed journal articles published in English were included, while conference papers, book chapters, dissertations and other types of documents were excluded. This selection criterion may have resulted in important research findings on translation strategies for polysemous words being omitted. Second, the review was limited to fully accessible texts to ensure readability and analytical consistency, thereby excluding works containing only summaries or partial chapters, which may have overlooked some high-quality studies. Third, the inclusion criteria focused exclusively on literature in which polysemy was the central research topic; articles that merely included polysemous words without emphasising them as a primary focus were excluded, which might have limited the scope of the study. Finally, the keyword search strategy represents an inherent limitation, as "polysemy" research is terminologically inconsistent across disciplines, potentially overlooking relevant studies that are not captured by the search system. Future research can build on this foundation by expanding language coverage, document types and search strategies to create a more systematic and comprehensive analytical framework for polysemous word translation strategies.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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