

Challenges of translating geological terminology from English into Uzbek: polysemy and typological divergence

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Abstract

The translation of geological terminology from English into Uzbek poses complex challenges that extend beyond word-for-word equivalence. Central to this complexity is the phenomenon of polysemy, where a single term acquires multiple meanings across scientific, technical, and everyday domains. Terms such as *deflation*, *cirque*, *cleavage*, and *fault* exemplify the semantic ambiguity that can arise when disciplinary contexts are not adequately considered. Furthermore, typological differences between languages, such as the SVO word order in English and the SOV order in Uzbek, increase the syntactic and semantic adaptation required in translation. These issues highlight the importance of systematic lexicographic research, the compilation of bilingual and explanatory dictionaries, and the standardization of scientific terminology through collaboration among linguists, geologists, and translators. By addressing polysemy and linguistic typology, translators can ensure semantic accuracy, disciplinary consistency, and the integration of Uzbek scientific discourse into the global academic community.

Keywords: Geological terminology; translation studies; polysemy; typological divergence; Uzbek language; semantic accuracy; lexicography.

The translation of geological terminology from English into Uzbek cannot be limited to a mechanical word-for-word process. Instead, it requires a nuanced approach grounded in deep familiarity with geology, awareness of linguistic structures, and creativity in adapting or coining terms to adequately reflect scientific precision [7]. The translator must navigate complex intersections of language and science, where a single term may carry multiple meanings across disciplines, thus creating risks of misinterpretation.

A primary challenge is polysemy, whereby a term acquires divergent meanings in different domains. Terms such as *coagulation* (*koagulyatsiya*), *inversion* (*inversiya*), *absorption* (*absorbsiya*), and *deflation* (*deflyatsiya*) are employed not only in geology but also in medicine, chemistry, physics, economics, and even art. For instance, *deflation* in geology refers to the erosion of land surfaces by wind, while in economics it denotes a reduction in the general price level of goods and services. Without contextual awareness, such terms may yield mistranslations that obscure the intended scientific meaning [5].

Another illustrative case is the English term *cirque*, a geomorphological formation resulting from glacial erosion. Its Uzbek equivalent, *amfiteatr*, typically evokes images of theaters or architectural structures. Unless clarified through explanatory translation, this semantic mismatch risks confusion, as the cultural associations of *amfiteatr* diverge from its scientific application [9].

Similarly, *cleavage* exemplifies disciplinary divergence. In geology, it denotes the splitting of minerals along crystallographic planes. In English biology and medicine, however, it refers to cell division and anatomical features. In Uzbek, the geological term *klivaj* is used exclusively in geology, whereas embryology employs *parchalanish* or *maydalanish*. This separation highlights the importance of terminological consistency within and across disciplines [8].

Borrowed terms also reveal inconsistencies. The French-derived *defile* denotes narrow mountain passes in geology and geography. In English, it is broadly applied in both fields, yet in Uzbek its use is restricted primarily to geography. Similarly, *yielding*, which in English describes fluids emerging from drilling wells, mines, or springs, is also applied in engineering

and construction. In Uzbek, however, its cross-disciplinary usage remains limited, leading to potential inconsistencies in professional discourse.

Further examples illustrate the same tendency. The English term *fault* denotes fractures in the Earth's crust in geology, but in everyday English it means "mistake" or "responsibility." If translated literally into Uzbek without scientific clarification, it could be misinterpreted as *ayb* instead of the geological term *yoriq*. Likewise, *plate* may signify tectonic plates in geology, a flat dish in everyday usage, or even a component in engineering, underscoring the critical role of context [6].

These examples demonstrate that the challenges of translating geological terms extend beyond lexical equivalence. They involve issues of semantic accuracy, cross-disciplinary consistency, and cultural associations. Addressing these issues requires systematic lexicographic research, the compilation of bilingual and explanatory dictionaries, and the establishment of standardized terminology through collaboration among geologists, linguists, and translators. Such initiatives will enhance semantic fidelity, support terminological standardization, and ensure that Uzbek scientific discourse remains aligned with international practices [7].

A central issue in the translation of scientific and technical texts is the problem of polysemy, i.e., the presence of two or more meanings within a single terminological system. According to linguistic theory, distinguishing between polysemous and unambiguous (monosemous) terms is essential in maintaining semantic accuracy during translation [6]. For instance, the English word *coal* (Uzbek: *toshko'mir*) functions as a polysemous term: in petrography, it is defined as a type of rock, whereas in mining it is categorized as a mineral. Without proper contextual interpretation, the translated term may fail to capture its precise disciplinary meaning.

Another illustrative case is the term *weathering* (*nurash* or *eroziya*). In petrography, it denotes the destruction of rocks by wind-blown mineral particles; in mining, it is similarly applied to erosion processes. However, in military terminology, the same word is polysemously extended to mean "degasation," i.e., damage from chemically harmful or explosive substances. This multiplicity of meanings shows that polysemous terms require careful contextualization in the translation process [7].

Polysemy is not limited to geology. For example, the English term *cleavage* can refer to the splitting of crystals in mineralogy, the process of cell division in biology, and even stylistic phenomena in cultural studies. Translating *cleavage* into Uzbek (*kliva*) works in geology, but in biology Uzbek employs *parchalanish* or *maydalanish*. This divergence demonstrates how polysemous terms create challenges in maintaining semantic fidelity across disciplines [1].

Alongside polysemy, typological differences between languages also play a crucial role in translation. Comparative typology has classified world languages according to their syntactic word order. For instance, Turkic languages such as Uzbek are generally characterized by SOV (subject–object–verb) word order, whereas Indo-European languages like English and Russian typically follow SVO (subject–verb–object). Certain African languages even display OVS (object–verb–subject) order [2].

The degree of similarity in word order often determines the relative ease of translation. For example, English and Russian, both belonging to the Indo-European family, share a relatively similar SVO structure. Thus, geological sentences in English, such as "*Weathering destroys rocks through chemical processes*," correspond quite closely to Russian syntax: "*Выветривание разрушает породы через химические процессы*." This structural proximity facilitates translation between the two languages.

By contrast, translating the same sentence into Uzbek requires structural reorganization due to its SOV typology: "*Kimyoviy jarayonlar orqali nurash jinslarni yemiradi*." Such differences demand a higher level of syntactic and semantic adaptation from the translator [9].

Therefore, both polysemy and typological divergence underscore the complexity of translating geological terms. Effective translation requires not only terminological precision but also a deep awareness of linguistic systems, contextual factors, and disciplinary conventions.

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