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TRANSLATION AND TERMINOLOGICAL EQUIVALENCE OF SEISMOLOGICAL TERMS IN ENGLISH AND UZBEK

Alijanova Madina Xamidjon qizi
Teacher, Department of Theory and Practice of Oriental Languages
Andijan State Institute of Foreign Languages (ASIFL)
mshoxobiddinova@bk.ru
+998 93 108 23 12
DOI:https://doi.org/10.5281/zenodo.22836508

Introduction

The rapid development of geophysical research and earthquake-monitoring technologies has increased the need for precise and consistent specialized terminology. Seismology relies on a highly structured vocabulary to identify seismic phenomena, describe their characteristics, record measurements, and communicate scientific findings. Because research and technical information are increasingly exchanged across national and linguistic boundaries, the translation of seismological terminology has become an important part of international scientific communication.

English occupies a particularly significant position in the dissemination of contemporary scientific information, while Uzbek serves as the language in which seismological knowledge is communicated to local researchers, specialists, students, and the wider public. In this context, translating a seismological term involves more than finding a dictionary equivalent. The translator must consider the conceptual content of the term, its position within the terminological system, its linguistic structure, and the conventions of scientific usage in Uzbek.

The English and Uzbek languages employ different lexical and grammatical resources for representing specialized concepts. Some seismological terms have established one-word equivalents, whereas others are transferred through borrowed forms, multi-word combinations, or descriptive constructions. These differences may create difficulties in maintaining terminological precision and consistency, particularly in scientific and technical texts.

The present study focuses on the translation and terminological equivalence of seismological terms in English and Uzbek. It examines the ways in which specialized concepts are transferred between the two languages and identifies the principal forms of equivalence and translation strategies. Particular attention is given to lexical correspondence, borrowing and adaptation, structural differences, and the preservation of scientific meaning in the target language. Such an analysis can contribute to clearer scientific communication and may be useful for translators, terminology researchers, language teachers, and specialists working with English-Uzbek scientific texts.

Seismological Terminology as a Specialized System

A term is a word or word combination that has a specific meaning in a particular field of knowledge. Seismological terminology includes terms related to earthquakes, seismic waves, geological structures, earthquake measurements, seismic instruments, and earthquake effects. Common English terms include earthquake, seismic wave, epicenter, hypocenter, magnitude, intensity, fault, aftershock, foreshock, seismograph, seismometer, and seismic hazard. Their Uzbek equivalents include zilzila, seysmik to‘lqin, episentr, gipotsentr, magnituda, intensivlik, yoriq, takroriy zilzila, dastlabki zilzila, seysmograf, seysmometr, and seysmik xavf.

These terms form an organized system because they are connected with different aspects of the same scientific field. For example, earthquake identifies the main seismic event, seismic wave describes the movement of energy, epicenter indicates a location on the Earth's surface, and

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magnitude describes the size of an earthquake. When these terms are translated, their scientific relationships must also be preserved.

Terminological Equivalence

One of the main problems in scientific translation is finding an appropriate equivalent for a specialized term. English and Uzbek show several types of equivalence in seismological terminology. Some terms have direct lexical equivalents, while others are expressed through combinations of words or descriptive constructions.

For example, the English term earthquake corresponds to the Uzbek word zilzila. The forms are completely different, but the scientific concept is the same. Similarly, fault can be translated as yoriq. These examples demonstrate lexical equivalence between the two languages.

Other terms have similar international forms. For example, seismology corresponds to seysmologiya, seismic to seysmik, seismograph to seysmograf, and seismometer to seysmometr. These terms have entered Uzbek scientific language through international scientific communication and have been adapted to the phonetic and grammatical characteristics of Uzbek.

Some terms require a word combination in Uzbek. For example, seismic wave is translated as seysmik to‘lqin, while seismic activity corresponds to seysmik faollik. In these examples, the main scientific meaning remains the same, but the linguistic form follows the grammatical rules of Uzbek.

Translation Strategies

Different strategies can be used when translating seismological terminology. One common strategy is direct translation. This strategy can be used when the source term has a clear and established equivalent in Uzbek. For example, earthquake can be translated as zilzila and seismic hazard as seysmik xavf.

Another strategy is borrowing. Borrowed terms are particularly common in international scientific terminology. Words such as seismology, seismograph, and magnitude have corresponding adapted forms in Uzbek. This strategy makes it possible to preserve international scientific terminology while adapting it to the Uzbek language.

Descriptive translation is also important. Some English terms cannot be expressed naturally through a single Uzbek word. In such cases, Uzbek uses a phrase to communicate the meaning. For example, aftershock can be expressed as takroriy zilzila, while earthquake-resistant building can be translated as zilzilaga chidamli bino.

The choice of translation strategy depends on the term itself and the context in which it is used. A successful translation should preserve the scientific meaning while also following the lexical and grammatical norms of the target language.

Lexical and Grammatical Differences

English and Uzbek have different linguistic structures, and these differences influence the translation of seismological terms. English frequently uses compact noun combinations in scientific texts. Examples include earthquake prediction, seismic risk assessment, earthquake damage, seismic activity, and earthquake-resistant building.

Uzbek often expresses the same meanings through word combinations and grammatical forms. For example, earthquake prediction becomes zilzilani bashorat qilish, seismic risk assessment can be expressed as seysmik xavfni baholash, and earthquake-resistant building becomes zilzilaga chidamli bino.

These examples show that translation is not always a process of replacing individual words. The translator must change the grammatical structure when necessary in order to produce a natural and understandable expression in Uzbek.

The difference can also be observed in terms containing verbal concepts. English commonly uses nouns such as prediction, assessment, and reduction, while Uzbek may use verbal constructions

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such as bashorat qilish, baholash, and kamaytirish. Therefore, grammatical transformation is an important part of translating scientific terminology.

Problems in Translating Seismological Terms

The translation of seismological terminology may create several difficulties. One important problem is the distinction between terms that are closely related in meaning. For example, magnitude and intensity describe different aspects of an earthquake. Magnitude refers to the quantitative size of an earthquake, while intensity describes the effects of an earthquake in a particular place. Therefore, these terms should not be treated as interchangeable.

Another problem is terminological consistency. When the same term appears several times in a scientific text, it is important to use an appropriate equivalent consistently. Different translations of the same term may confuse readers and make the scientific text less clear.

Another difficulty is the translation of complex terms. English scientific language often creates long combinations of nouns and modifiers. Uzbek may require additional grammatical elements to express the same relationship. Therefore, translators need to understand both the meaning of the original term and the grammatical possibilities of Uzbek.

Scientific translation also requires attention to the intended audience. Terms used in a specialist research article may be different from expressions used in educational materials or public information. A translator should therefore consider both scientific accuracy and clarity.

Comparative Analysis of English and Uzbek Terms

A comparison of English and Uzbek seismological terminology demonstrates that the two languages use different methods to express scientific concepts. Some terms are translated using native Uzbek words, while others are borrowed and adapted from international scientific vocabulary.

For example:

English: earthquake — Uzbek: zilzila
English: seismic wave — Uzbek: seysmik to‘lqin
English: seismic activity — Uzbek: seysmik faollik
English: epicenter — Uzbek: episentr
English: hypocenter — Uzbek: gipotsentr
English: magnitude — Uzbek: magnituda
English: intensity — Uzbek: intensivlik
English: fault — Uzbek: yoriq
English: aftershock — Uzbek: takroriy zilzila
English: foreshock — Uzbek: dastlabki zilzila
English: seismograph — Uzbek: seysmograf
English: seismometer — Uzbek: seysmometr
English: seismic hazard — Uzbek: seysmik xavf
English: earthquake prediction — Uzbek: zilzilani bashorat qilish
English: earthquake-resistant building — Uzbek: zilzilaga chidamli bino

These examples demonstrate several types of correspondence. Terms such as seismograph and seismometer preserve international scientific forms, while earthquake and fault are expressed through Uzbek lexical resources. Other expressions, such as earthquake prediction and earthquake-resistant building, require grammatical restructuring.

Conclusion

The comparative study of English and Uzbek seismological terminology demonstrates that translation plays an important role in scientific communication. Seismological terms form a specialized system that includes concepts related to earthquakes, seismic waves, geological structures, measurements, instruments, and hazards.

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The analysis shows that English and Uzbek use several methods to express the same scientific concepts. Direct lexical translation, borrowing, adaptation, structural translation, and descriptive translation are among the main strategies used in the formation and translation of seismological terminology.

International terms such as seysmologiya, seysmik, seysmograf, and seysmometr demonstrate the influence of international scientific communication on Uzbek terminology. At the same time, words such as zilzila and yoriq demonstrate the ability of Uzbek to express scientific concepts through its own lexical resources.

The differences between English and Uzbek grammatical structures also influence the translation of specialized terminology. English often uses compact noun combinations, whereas Uzbek may use word combinations with grammatical elements or verbal constructions. Therefore, accurate translation requires not only knowledge of vocabulary but also an understanding of the grammatical structure of both languages.

The study of English and Uzbek seismological terminology can be useful for scientific translation, terminology development, language teaching, and the preparation of specialized dictionaries. A systematic approach to terminological equivalence can help translators preserve scientific meaning and improve the clarity and accuracy of communication between specialists using English and Uzbek.

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