# MAIN PROBLEMS IN TRANSLATING SCIENTIFIC AND TECHNICAL TERMS AND THEIR SOLUTIONS

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**Abstract:** This article provides an in-depth analysis of the main challenges encountered in translating scientific and technical terms. These include finding precise equivalents, accounting for interlingual and cultural differences, the limitations of machine translation systems, and the syntactic complexity that requires high translator competence. Proposed solutions include the development of terminological databases, working with subject-specific dictionaries, translating based on context, and specialization of translators.

**Keywords:** translation, scientific-technical terms, equivalence, context, machine translation, cultural differences, terminological accuracy.

**Annotatsiya:** Ushbu maqolada ilmiy-texnik terminlarni tarjima qilishda uchraydigan asosiy muammolar tahlil qilinadi. Xususan, terminlarning ekvivalentini topish, madaniy farqlar, kontekstda anglash qiyinchiliklari, hamda avtomatik tarjima vositalarining kamchiliklari yoritiladi. Ushbu maqolada muammolarni bartaraf etish bo‘yicha ilmiy va amaliy tavsiyalar beriladi, shuningdek, tarjima jarayonida terminologik aniqlikni saqlashning ahamiyatiga urg‘u beriladi.

**Kalit so‘zlar:** tarjima, ilmiy-texnik terminlar, ekvivalentlik, kontekst, avtomatik tarjima, madaniy farq, terminologik aniqlik.

**Аннотация:** В этой статье будут проанализированы основные проблемы, с которыми сталкиваются при переводе научно-технических терминов. В частности, будут рассмотрены вопросы поиска эквивалентов терминов, культурные различия, трудности с пониманием контекста, а

также недостатки инструментов автоматического перевода. Автор дает научные и практические рекомендации по устранению этих проблем, а также подчеркивает важность сохранения терминологической точности в процессе перевода.

**Ключевые слова:** перевод, научно-технические термины, эквивалентность, контекст, автоматический перевод, культурные различия, терминологическая точность.

With the rapid development of science and technology, the translation of scientific and technical texts is gaining increasing importance. In particular, in texts translated from English, German, French, or Russian into Uzbek and vice versa, the correct and accurate rendering of terms is a key factor in the quality of the translation. This paper explores the core issues in translating scientific and technical terms and provides feasible solutions to address them.

**1. The Concept and Features of Terms**

A term is a specialized word or phrase used within a specific field or discipline that carries a precise semantic load. Unlike common vocabulary, terms retain their meaning even outside of a sentence context. For example, *torque*, *neural network*, and *thermodynamics* are all specialized terms that carry specific meanings in their respective fields.

“Terms are the language of science; to mistranslate them is to misunderstand the science itself.” (Sager, 1990)

**2. Key Problems in Translation**

**a) Equivalence Problems**

Many foreign terms lack direct equivalents in the Uzbek language. For instance, *cloud computing* is variably translated as "bulutli hisoblash", "bulutli texnologiya", or "onlayn saqlash tizimi", leading to terminological inconsistency.

**b) Cultural and Cross-Linguistic Differences**

Some terms are deeply rooted in Western cultural and institutional systems and are hard to localize accurately. For example, terms like *bachelor’s degree*,

*PhD*, or *tenure* do not have direct Uzbek counterparts, leading to approximation or explanatory translation.

**c) Inaccuracy in Machine Translation**

Automated translation tools such as Google Translate and DeepL often mistranslate scientific terms due to their inability to process context. For instance, the term *cell* could mean "hujayra" (biology), "katak" (Excel), or "aloqa zonasi" (telecommunications), depending on the field.

**d) Syntactic and Stylistic Ambiguity**

Scientific terms often appear in complex sentence structures. Translators must be skilled in correctly integrating such terms grammatically and stylistically into the target text.

**3. Solutions and Recommendations**

**a) Use of Specialized Terminological Sources**

Resources such as *IATE*, *EuroTermBank*, *Cambridge Dictionary of Science and Technology*, and *Multitran* can provide accurate equivalents for scientific terms.

**b) Creating a Terminological Minimum and Standardization**

A fixed list of standardized scientific terms approved by linguistic authorities (such as national academies) should be available for translators to consult.

**c) Context-Based Translation**

Translators must interpret terms within the broader context of the sentence or paragraph, rather than isolating them.

**d) Training Specialized Translators**

Technical translation requires not only linguistic skills but also subject-matter expertise. Translators should be trained with a focus on specific disciplines such as engineering, medicine, or IT.

**Examples and Analysis Table**

| Original Term | Incorrect Translation | Correct Translation | Comment |
|---|---|---|---|
| Load shedding | Yukni silkitish | Energy shutdown / Power outage | Cultural/contextual mismatch |
| Feedback loop | Orqaga bog'lanish aylana | Feedback system / loop | Needs technical context understanding |
| Binary tree | Ikkilik daraxt | Binary tree structure | Programming-specific terminology |
| Cloud computing | Bulutli hisoblash (vague) | Cloud technology / Cloud computing | Needs standardization |

The translation of scientific and technical terms is complicated by issues of equivalence, cultural divergence, and contextual variation. To address these challenges, translators should rely on validated resources, follow standard terminological databases, and focus on contextual accuracy. Moreover, developing subject-specific translator training programs will ensure greater precision and clarity in scientific translations.

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5. Terminology Databases:
   - IATE: https://iate.europa.eu
   - EuroTermBank: https://www.eurotermbank.com
   - Multitran: https://www.multitran.com

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