# THE USE OF CAT TOOLS IN THE TRANSLATION OF SCIENTIFIC TERMS: PROSPECTS AND LIMITATIONS

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**Annotation:** This article analyzes the prospects and limitations of Computer-Assisted Translation (CAT) tools in the field of scientific translation. Special attention is given to SDL Trados, MemoQ, and Wordfast, with comparisons of their terminology management capabilities, translation memory (TM), and quality assurance (QA) features. The paper explores both the technological advancements and the inherent linguistic challenges these tools present. Through practical examples, it reveals the ways CAT tools can support or hinder the accurate translation of scientific terms. The study concludes that effective integration of CAT tools must combine technical automation with expert human judgment to ensure contextual and terminological adequacy.

**Keywords:** CAT tools, scientific terminology, SDL Trados, MemoQ, Wordfast, translation memory, terminology management, linguistic accuracy

**Annotatsiya:** Ushbu maqolada ilmiy terminlarni tarjima qilishda kompyuter yordamidagi tarjima (CAT) vositalarining imkoniyatlari va cheklovlari tahlil qilinadi. SDL Trados, MemoQ va Wordfast tizimlari terminologik boshqaruv, tarjima xotirasi va sifat nazorati funksiyalari jihatidan solishtiriladi. Texnologik rivojlanishlar bilan birga, bu vositalarning lingvistik cheklovlari va kontekstual noaniqliklariga ham e’tibor qaratiladi. Amaliy misollar orqali CAT vositalarining ilmiy tarjimada qanday yordam berishi yoki to‘siq bo‘lishi ko‘rsatiladi. Mualliflar samarali tarjima inson bilimini avtomatlashtirilgan jarayon bilan uyg‘unlashtirish orqali erishilishini ta’kidlaydi.

**Kalit so‘zlar:** CAT vositalari, ilmiy terminologiya, SDL Trados, MemoQ, Wordfast, tarjima xotirasi, terminologiya boshqaruvi, lingvistik aniqlik

**Аннотация:** В статье рассматриваются перспективы и ограничения использования средств компьютерной поддержки перевода (CAT) в научной сфере. Особое внимание уделяется SDL Trados, MemoQ и Wordfast, их возможностям в управлении терминологией, работе с памятью переводов и проверке качества. Представлены как технологические достижения, так и лингвистические трудности, с которыми сталкиваются переводчики. На практических примерах показано, как эти инструменты способствуют точности или, напротив, вызывают искажения научных терминов. Вывод гласит: эффективный перевод требует сочетания автоматизации с экспертной оценкой переводчика.

**Ключевые слова:** CAT-инструменты, научная терминология, SDL Trados, MemoQ, Wordfast, память переводов, управление терминологией, языковая точность

Scientific translation demands both linguistic precision and subject-matter consistency. With the increase in multilingual publications, **Computer-Assisted Translation (CAT) tools** have become indispensable in managing terminology, ensuring consistency, and increasing efficiency [1, p. 14]. However, the translation of scientific terms involves more than lexical matching—it requires a **context-sensitive and discipline-specific approach**.

The most widely adopted CAT tools—**SDL Trados, MemoQ**, and **Wordfast**—offer various levels of functionality. This paper explores how these tools enhance the scientific translation process while addressing their limitations in accurately reflecting nuanced terminology, especially when context or pragmatic meaning is at stake.

## Functionality Overview of CAT Tools

CAT tools are not machine translation systems. Rather, they are **translator-support systems** that integrate features such as:

- **Translation Memory (TM):** Reuse of previously translated segments
- **Termbase Management (TB):** Controlled vocabulary systems
- **Quality Assurance (QA):** Automated checks for terminology, punctuation, and formatting

**SDL Trados-** Known for its robust TM engine and MultiTerm termbase, Trados is the industry standard. However, it has a steep learning curve and high licensing cost [2, p. 61].

**MemoQ-** Offers intuitive UI, collaborative translation environments, and flexible TB management. MemoQ is often favored in academic and freelance contexts [3, p. 90].

**Wordfast-** A lightweight alternative, ideal for freelance translators. Wordfast Pro integrates cloud features and real-time QA tools [4, p. 41].

## Comparative Evaluation: Scientific Domain Performance

| Tool | Terminology Control | Contextual Accuracy | Usability | Cost |
|---|---|---|---|---|
| Trados | Excellent | Moderate | Moderate | High |
| MemoQ | Good | High | High | Moderate |
| Wordfast | Basic | Moderate | High | Low |

As seen above, MemoQ provides superior contextual suggestion algorithms, which are crucial when translating **discipline-specific terms** such as “biomarker” or “quantum yield.”

## Prospects of CAT Tools in Scientific Term Translation

CAT tools help translators:

- Maintain **terminological consistency** across large corpora
- Reduce **time and effort** via automated segment reuse
- Manage **domain-specific glossaries**

- Collaborate in **team environments** with shared databases

For example, when translating clinical trial documents, terms like *placebo*, *randomization*, and *efficacy endpoint* recur frequently. CAT tools minimize duplication and ensure consistency.

Furthermore, **custom plug-ins and AI integration** in newer versions of MemoQ and Trados allow for adaptive suggestions based on translator feedback [5, p. 121].

**Limitations and Challenges**

Despite their strengths, CAT tools also face significant limitations:

**Contextual Blindness-** TM segments may be reused inappropriately when **discourse or pragmatic function** changes. For instance, *exposure* in toxicology vs. *exposure* in photography requires domain awareness.

**Over-Reliance on TM-** Heavy dependence on TM can lead to "translation by habit," missing critical **semantic shifts** [6, p. 76].

**Inadequate Handling of Realia-** Scientific texts often include **cultural-specific terminology** (e.g., health system-specific abbreviations). CAT tools lack the **cultural judgment** needed to contextualize these.

**Interface and Learning Curve-** New translators may find tools like SDL Trados **complex and overwhelming**, potentially slowing productivity.

**Empirical Case: Translating Oncology Protocols**

A recent trial of MemoQ in translating oncology research protocols showed:

- 30% increase in speed
- 100% consistency in drug and dosage terminology
- However, incorrect rendering of *protocol deviation* due to rigid TM match (translated as "yo'l-yo'riqdan og'ish" instead of clinical meaning "normadan chekinish") [7, p. 143]

This shows the tool's **mechanical precision** but **semantic vulnerability**.

CAT tools offer undeniable benefits in the scientific translation landscape: **consistency, speed, and control**. Yet, these tools remain support systems, not replacements for human expertise. Scientific term translation requires **not only accuracy but contextual relevance**, which automation alone cannot ensure.

The translator's role evolves from simple linguistic conversion to **terminological gatekeeper and cultural mediator**. When used wisely, CAT tools empower this role, making translation **faster, more reliable, and better integrated** with the knowledge systems of the scientific world.

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