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Retrieving Terminological Information On The Net
Are Linguistic Tools Still Useful?

Abstract

In this communication we present a comparative evaluation of the effectiveness of search engines (SE) and linguistic tools (LT) to retrieve terminological information from the net, in the context of specialized translation tasks. For achieving that goal, an experiment with translators has been carried out. The results indicate that SE are more effective than LT in situations where the answer is partially ignored by the translator (i.e. the translator is hypothesizing one or several possible answers in the target language before searching). On the other hand, LT have not been either more appropriate in situations where the translator showed total ignorance of the possible answers before searching.

1. Introduction

In this paper we want to verify the qualities of SE as effective tools for solving terminological problems in contexts of specialized translation. *A priori*, on the basis of our experience, we suggest that SE might be more effective than LT conceived and used by professional translators, such as terminological databanks and bilingual dictionaries. With the purpose of validating this hypothesis we will classify the needs of information of specialized translators based on their previous knowledge of the possible answers and therefore their expectations. Next an experiment with translators will be carried out. This will allow us to determine the effectiveness of both types of tools for different types of queries.

2. The concept of "information needs" in the domain of translation

A literature review in this domain led us to the conclusion that there are no typologies of information needs established for the purposes of specialized translation. Thus, on the basis of our previous experience analyzing translation problems as translation teachers, we considered two types of situations in which the translator decides browsing the Web to find the equivalent that he doesn't know for sure (or he doesn't know at all). According to this, questions are divided into two main groups:

    A. Questions made from a total ignorance of the answer: the translator does not know the equivalence or the possible equivalences of the term he is searching for. This group of questions is labelled "absolute lack of knowledge" (ALK).

    B. Questions made from a partial ignorance of the answer, i.e. an intuition of the existence of one or more equivalences in the target language, that have to be

checked in real usage. These questions will be labelled "partial lack of knowledge" (PLK).

In the first case, the logical point to start with will be linguistic tools (LT) that contain equivalences in source and target language, stored in a lexical database. In the second case, the starting point is more likely accessing real texts in the target language that can validate the intuitions about the answers. The Web is used here as a huge textual corpus, and SE are the means of browsing the corpus.

3. Online tools for translation

Terminological databases and databanks (TDB) have been, from the early seventies (Eurodicautom, 1973), one of the most important and reliable sources of information for many professional groups dealing with specialized lexical information (translators, technical writers, lexicographers, information scientists). TDBs aim at recording specific meanings associated with different subject field, precise definitions, controlled denominative variation (synonyms, abbreviations, alternate spellings, systematic or scientific names, symbols) and equivalents in other languages. In addition, other kinds of sociolinguistic and sociocultural data are also recorded, as geolectal variation, usage notes or conceptual information related to a more restricted language community. All this information is organized and structured into a lexical database, under an onomasiological orientation, i.e. focusing on the concept: every record of a TDB contains all the information related to that concept (definition, contexts, alternatives, equivalents in other languages). This rigid structure in records and fields is supposed to provide a safe and reliable access to the information sought.

On the other hand, the proliferation of electronic dictionaries on the Web has caused the appearance of a mixed type of linguistic resource, which might be situated between a lexicographical resource (bilingual dictionary) and a specialized forum for professionals. In these sites, registered users, mainly professional translators, technical writers and language teachers, complete the informations contained in the base dictionary with contributions dealing with specialized terms, equivalences and other kinds of linguistic and grammatical questions. As opposed to the mentioned LT, there is an increasing use of SE as they are seen as the door to a wide variety of resources.

Table 1 shows a comparison between main features of both resources.

Table 1. SE versus LT features

	SE	LT
Updated	Constant	Slow
Corpus	Not filtered, all the pages indexed by the SE, including some LT accessible as plain text	Filtered by a team of terminologists / lexicographers
Linguistic information	Context of usage Collocation Frequencies of usage Multilingual, Multicultural Multidomain	Definition Synonyms, variants Equivalences Usage notes, scope notes, equivalence remarks
Reliability	Not controlled, but statistically relevant	Very high, often with explicit reliability codes (preferred, recommended, rejected term)

4. Experiment

For proving the hypothesis above presented and to fulfill the objective of this investigation, we have raised an experiment that has been carried out during January and February 2008. The experiment consisted of a design of a set of information needs for specialized translation according to two categories — "absolute lack of knowledge" questions and "partial lack of knowledge" questions.

4.1. User's profile

The experiment was carried out by a group of 16 students at the Faculty of Translation and Interpretation, Universitat Pompeu Fabra, Barcelona. All the students had a strong background in Scientific and Technical Translation, were all at 4th year, their native languages being Spanish or Catalan. Previously to the test with the 16 users, 2 users of advanced profile made all the tasks without time constraints, and gave us feedback about possible misunderstandings, which allowed us to make some adjustments in the forms and the questions in order to improve the reliability of the test.

4.2. Selecting SE and LT

Two SE and two LT were selected. SE were Google and Yahoo, as they currently are the most generalist SE used anywhere. The selected LT were IATE and Word Reference. Both resources were created for storing lexical equivalences between languages and both are also very popular resources among translators. The first one is a terminological data bank and the second one is a dictionary. All resources are freely accessible on-line, multilingual and multidomain. For the searches with the SE, the users of the experiment were allowed to use to all the strategies they knew for refining each search: — Limiting the search to pages from Spain — Limiting the search to pages written in Spanish — Indicating the word "translation" next to the searched term — Indicating the word "glossary" next to the searched term.

4.3. Selecting Texts

Two scientific texts in English were selected:

Figure 1. Scientific texts selected for the experiment

UNAIDS/WHO Working Group on Global HIV/AIDS and STI Surveillance. *Guidelines for using HIV testing technologies in surveillance: selection, evaluation, and implementation*, 2001.
Darja Kanduc et al. "Cell death: apoptosis versus necrosis (review)". *International Journal of Oncology*, 21: 165–170, 2002.

The first text it is a specialized text that contains recommendations from an international agency in the domain of health care, and is addressed to physicians willing to work in the field, in surveillance and monitoring tasks. The second text is a review article, published in an international journal that presents a discussion about certain concepts in the domain of cellular biology. Both texts are written by specialists and are addressed to specialists, and we consider them representative of the scientific discourse in English language.

4.4. Previous questions to the tasks

After reading the texts, the users had to propose a translation (one or several equivalent terms) for the words and expressions that were requested. Besides, the users were also requested to indicate the level of success they think they might achieve for each of the questions, in order to evaluate their previous knowledge about the problems raised, and their expectations before carrying out the search.

Figure 2. Example of previous question that had to be answered

Tarea G1T1PA1
¿Cuál es la equivalencia en castellano de *finger stick*?
Respuesta: _____ Nivel de acierto esperado (0-10): _____

4.5. Tasks

Each user was asked to give an answer to a set of translation problems selected from the texts presented above. The time to answer each question was limited to 10 minutes. Should they have no answer for the problem raised, they had to skip to the following question. The selected questions, organized according to the categories above mentioned, included the most common problems occurred in translating scientific texts.

- Questions arised from an absolute lack of knowledge: the translator does not know the equivalence or the possible equivalences. Example: *Which is is the equivalence of 'serosurveillance'*?
- Questions arised from a partial lack of knowledge: the translator is capable of hypothesizing one or more equivalences in the target language, although these options need to be checked. Example: *For mechanicistically, it must be said "mecánicamente, mecanicistamente or mecanicísticamente"*?

The tasks were distributed to users in two groups (G1, G2). Each user had to work with both texts (T1, T2) according to the following table:

Table 2. Distribution of the tasks by groups and texts

	USERS GROUP 1	USERS GROUP 2
Text 1	1º LT	1º SE
	2º SE	2º LT
Text 2	1º SE	1º LT
	2º LT	2º SE

4.6. Answers to the tasks

For each of the eight questions to be answered, users were requested to look for the solution in each resource and evaluate the satisfaction of the information sought. This is an example of the questionnaire:

Figure 3. Questionnaire

| |
|---|
| **Tarea G1T1PA1** |
| **¿Cuál es la equivalencia en castellano de *finger stick*?** |
| **IATE** |
| ¿Ha obtenido la respuesta?　Sí / En parte / No　　　　　Satisfacción (0-10): |
| Respuesta: |
| **Yahoo!** |
| ¿Ha obtenido la respuesta?　Sí / En parte / No　　　　　Satisfacción (0-10): |
| Respuesta: |
| Estrategia de búsqueda que le ha dado la respuesta: |
| Posición del sitio web en el ranking de resultados (1-10): |
| URL: http:// |
| **Comentarios:** |

In the searches carried out in SE, users had to indicate in addition: in which position was the answer ranked, the searching strategy, and the URL of the Web site where the answer was obtained.

5. Results

The experiment has given us an important amount of data that have to be carefully analyzed. For the purposes of the current research, we have first analyzed the variable of effectiveness. By effectiveness we mean the capacity a tool has to give an answer to the need of information.

In order to determine the degree of effectiveness of the tools we wanted to compare, we have used the answer to the question "has obtained the answer" and we have entered the answers "yes", "partly" and "no" so that each affirmative answer has supposed a point, each answer "partly" has been valued half a point and each negative answer has not added any point. The scores obtained by type of question and type of tool are presented in figure 4.

Figure 4. Values obtained in effectiveness for the linguistic tools (LT) and SE to questions for which the user didn't know the answer totally (ALK) or partially (PLK)
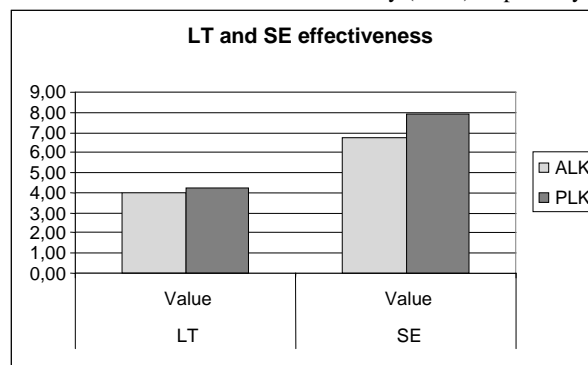
According to these results, SE are more effective than LT for both types of questions, no matter if the user showed ALK or PLK, but are more effective in the questions of the second type (PLK), as we raised in the initial hypothesis. Presenting these data in percentage, we can see how SE has a higher percentage of positive answers (table 3).

Table 3. Percentage of answers obtained for each type of tool in each type of question

		ALK	PLK
	Yes	25%	28%
LT	Partly	31%	28%
	No	44%	44%
	Yes	63%	72%
SE	Partly	9%	16%
	No	28%	13%

Looking at these results where the SE seem to win both types of questions with enough difference with respect to LT, we introduced a second variable that would still modify the values presented.

For the purposes of specialized translations, SE can be used either as a textual corpus, as a corpus to see relative frequencies of usage, but also as pointers to other LT resources. We decided to review in how many cases the answers obtained in SE brought the user to a linguistic resource (i.e., a dictionary or a terminological data bank). This happened to be the 16% in the case of ALK questions and 0% in PLK questions (figure 5).

Figure 5. Percentage according to the different usages of SE tools
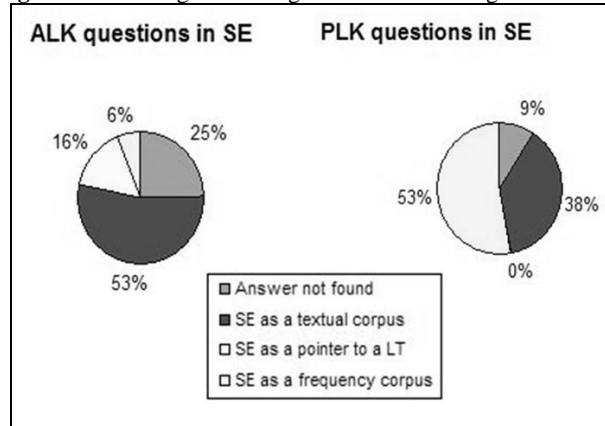
If we increase the values presented in figure1considering that there has been a 16% percentage of positive answers in SE where the resource pointed to a LT, we can see the difference in the following values (figure 6). After the correction, the score of the answers for which the user has a partial ignorance has increased in the evaluation of the LT, and has decreased in the evaluation of the effectiveness of SE. As for the answers for which the user had a partial ignorance, there has been no variation, thus no correction.

Figure 6. Values of corrected effectiveness for LT and SE for both ALK and PLK questions
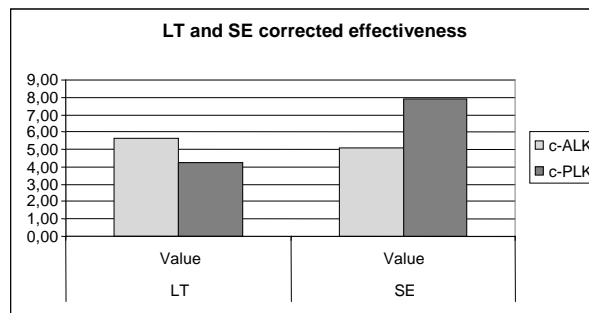
If in figure 4 we could affirm that SE presented higher degree of effectiveness than the LT to solve translation problems, and this degree is slightly higher for the questions in which the user has a partial knowledge of the answer (PLK), the correction considering that in some occasions the SE points to a LT show that SE are better valued in PLK questions (8/10 points, as opposed to 4/10 points of LT), whereas for ALK questions both types of tools maintain similar lower values.

Therefore, before and after the correction the hypothesis of this research work has been validated. SE are more effective to solve translation problems in which the ignorance of the answer is partial. However, it has not been possible to verify that LT would be more appropriate in the cases where the ignorance of the answer is total, because the values of these answers before correction are much lower than the values obtained by SE, and after the correction the values are practically equal.

6. Future work

The results obtained allow us to further investigate considering qualitative variables we have in the questionnaires:

- Previous knowledge of the answers. Being aware of the previous user's knowledge for each one of the answers is a relevant point because it will indicate if the questions for which we estimate "total ignorance" deserve such label. There is no doubt in the case of the questions labelled as "partial ignorance" since in the question we gave several possible answers.
- Satisfaction. This value will be calculated on the basis of the evaluation given by the users for each answer. We will be able to obtain a score (from 0 to 10) for both types of questions (ALK and PLK) and type of tools (LT and SE).

As far as the methodology is concerned, in a further stage of the research we will have a user group making the tasks with direct observation from our part. Think aloud techniques will be used, and sessions will be recorded to be able to study carefully the steps taken in the search process, having the opportunity of revising comments made by the user, and thus determining precisely the time elapsed and the number of clicks made for answering each question.