

Educational Applications of a Machine Translation System

TATYANA M. GURINA

This paper is concerned with the technology of using the PARS English-Russian bi-directional machine translation systems in teaching English as a foreign language. This technology has no connection with the old form of computer-assisted language learning which uses "drill-and-practice" computer exercises and provides a sort of surrogate "electronic teacher". The main objective of the educational implication of PARS is to help the learner become familiar with the words in their normal contexts. The introduction of a machine translation system into teaching foreign languages is intended to get the most fruitful pedagogical results from the use of personal computers and expose the learners to the up-to-date information technologies.

This paper is concerned with the technology of using machine translation systems in teaching foreign languages. This technology has no connection with the old form of computer-assisted language learning that uses "drill-and-practice" computer exercises and provides a kind of surrogate "electronic teacher". This technology is intended to put the learner into the position of becoming a discoverer who discovers the meaning of the word from its context

As is well known, a word comes to a life when it occurs in a sentence. The main objective of the two series of computer lessons that were developed as an educational implication of the PARS English-Russian machine translation system was to help the learner become familiar with the words in their normal contexts. Introduction of a machine translation system into teaching foreign languages was intended to get the most fruitful pedagogical results from the use of

personal computers and let the learners make use of up-to-date information technologies.

The first series of lessons is called "Homonymy" and deals with words that are pronounced like other words or word combinations but are different in meaning or spelling, such as "sum/some".

The first lesson in this series of lessons is intended to help the learners master the technique of translating unfamiliar texts with the aid of the PARS machine translation system.

The students are given a short English text including pairs of homonyms. The first task is to delete the incorrect word in each pair. The homonym that fits should remain. In case of coming upon unknown words, the learner should consult the PARS electronic dictionary for the translation.

The next step is translating the text from English into Russian with the help of the translating program.

Then the learner is to analyze the quality of the translation performed by the computer, and correct it if necessary.

The last step is filling in the table of homonyms:

Pair of English homonyms

... / ...

Pair of Russian equivalents

... / ...

The structure of the other lessons in the "Homonymy" series is quite different from that of the first lesson.

The text and the table of homonyms that the learner worked with at the first lesson are currently available for him/her at the other lessons. The student can use them for references.

Each lesson comprises two lists of sentences. One of them is called "Monolingual dictionary" and provides simple definitions of some homonyms that occur in the first text. However, the homonyms themselves are missing in these sentences. Instead of the homonym, there is a space in each item of the "Monolingual dictionary".

The other list is called “The list of contexts”. It provides illuminative sentences showing the meanings of the homonyms given in the “Monolingual dictionary”. The homonyms are missing in these sentences as well. The learner is given the following instructions:

- restore the “Monolingual dictionary” using the table of homonyms as a reference;
- discover which context matches each of the homonyms in the “Monolingual dictionary”;
- summarize the results of the work by filling in the following table (this should be done to make the results of the student's work easily checkable for the teacher):

No. of the item in the monolingual	Homonym explained in this item	Numbers of contexts in which this homonym occurs
---------------------------------------	-----------------------------------	--

Additional practical exercises are available on the basis of the lexis used in the lesson for those capable of proceeding to this stage, so that the learner's command of the language and flexibility of expression can be enhanced. The learner should create some sentences of his/her own and adapt them to the translation algorithm.

Another series of computer lessons has been developed for the topic “Phrasal verbs”.

The lesson is divided into five stages:

- 1) translating the illustrative sentences from English into Russian with PARS;
- 2) choosing synonyms;
- 3) filling in the table;
- 4) compiling an electronic dictionary;
- 5) creating new sentences.

At the beginning of the lesson, the learners are introduced to a list of 678 specially selected illustrative English sentences each including a phrasal verb. There are several types of phrasal verbs.

The verbs of the COME IN type consist of verb + adverb particle as two separate lexical items. In such phrases, IN, OUT, DOWN and the like have their basic meaning. The same pattern is frequently used, but with the adverb particle having a secondary meaning, as in GIVE UP (collapse). Combinations like GIVE UP, GIVE IN (both meaning «surrender») are idioms whose meaning is different from the sum of its parts.

At the first stage, the learners do the following tasks:

- § translate the illustrative sentences from English into Russian using the machine translation system;
- § analyze the translation performed by the program and find out in which way the program has translated each of the phrasal verbs (as an idiom or as consisting of separate lexical units);
- § in case the program has translated the two parts of the phrasal verb separately, check if the combined literal meaning of separate lexical items fits the illustrative sentences in which the phrasal verb occurs;
- § if the phrasal verb was translated by the program as an idiom, put down both phrasal verb and its idiomatic meaning into a special table.

The learner should take into account that some of the phrasal verbs can have both literal and idiomatic meanings. Attention should be paid to the fact that the phrasal verbs possessing idiomatic meaning can be polysemantic and need illustrative sentences to show their meanings.

At the next stage of the lesson, the learners are given a list of verbs that are synonymous to the phrasal verbs occurring in the illustrative sentences. The synonyms in the list are jumbled up. The learner is supposed to choose a synonymous counterpart to each phrasal verb.

To do this, the learner should use not the original list of the illustrative sentences but its copy in which all the phrasal verbs are substituted with blanks.

If the learner does not know the meaning of a synonym, he/she can ask the MT program for help as all the verbs of the list of synonyms are stored in the electronic dictionary.

If the learner can guess the meaning of the phrasal verb after he/she has analyzed the translation of the illustrative sentences performed by the program, he/she chooses the synonym deliberately. Then the learner finds a suitable context, fills in the blank and asks the program for translation to make sure that his/ her choice is correct.

If the learner has no idea about the meaning of the phrasal verb, he/she has to use the trial-and-error method to make his/her choice.

The third stage is meant to help the learner to keep in mind the new information he/she has obtained at the lesson.

After the learner has chosen the synonyms to all the phrasal verbs, he/she is supposed to fill in the table in which his/her work is summarized:

Phrasal Verb	Synonym	Russian equivalent

At the fourth stage, the learner is supposed to extend the electronic dictionary by adding to it the phrasal verbs having idiomatic meanings that were absent in the initial dictionary.

The last stage of the lesson is meant to stimulate the learner's creativity. The learner must create as much sentences using phrasal verbs he/she has learned at the lesson as possible. Another task is to make them up in such a way that the program could translate them in the best way.

These lessons have been used for several years at Kharkov Teachers' Training University and proven to be rather efficient, making learning English an interesting combination of linguistic and information science lessons.