

# TRANPRO – the Translation Processor

by Ian Johnston

Over the past few years, the Department of Modern Languages at the University of Dundee has been active in the field of computer assisted language learning (CALL), mainly using the BBC microcomputer, which has proved a flexible machine and is widely used in linguistic computing. As one of the other research interests in the department is machine translation, it was inevitable that the two would be combined sooner or later.

The widespread use of word processors in the department led to initial efforts to use the word processor as an aid to translation. Popular as word processors are with students and staff alike, the available software had a number of inherent drawbacks. Computer Concepts' *Wordwise-Plus* (and its predecessor *Wordwise*) can only edit text using a teletext character set, making it impossible to display foreign characters whilst editing. I wrote some programs to intercept output when printing, but this left us with the clumsy feature of seeing dollar signs and various arrows on the screen while editing – not the best aide-mémoire! Acornsoft's *View* software, on the other hand, does (with suitable program patching) provide the ability to display foreign characters while editing, but as it uses all but one of the BBC microcomputer's function keys, foreign character entry has to be effected by the use of assorted brackets, arrows, dollar signs and so forth. An additional problem was that neither of the word processors was capable of displaying more than one file on the screen at once. These problems, and the fact that the range of functions I require was not available in one word processing program, led me to the point where I decided that the best solution was to write my own wordprocessor. The result was TRANPRO, the translation processor.

Rather than attempt the impossible and produce a completely automated translation system, TRANPRO was

designed as a practical and available system, to be a translator's tool in the same way that a word processor is a writer's tool: that is, to let the computer take over the less interesting and more time-consuming tasks while keeping the creative talent firmly in the hands of the user. The word processing facilities reduce revisions to simple key presses, and the task of consulting a dictionary is speeded up considerably.

## Editing

Experience has shown that students in particular tend to translate word by word and only think about the restructuring of sentences once a translation has been found for each word. A necessary feature, then, was the ability to move and transpose words with the minimum of effort. This principle was taken to its logical conclusion with the ability to define a range of text on which to act, which could be a word, a sentence, or a whole paragraph. Whereas the standard word processing approach is to define blocks of text with special markers, TRANPRO is geared more towards the natural tendency to think in terms of logical text units, and so "understands" the concepts of words, sentences and paragraphs. These text units can then be transposed, removed, underlined, highlighted, have their case changed, and be otherwise manipulated without the user having to define markers explicitly. TRANPRO also takes foreign characters easily in its stride. Once the program has been

told which set of foreign characters to use, the function keys enter them into the text and they are treated just like any other character in the text. It is also possible to use non-Roman alphabets, such as Cyrillic, and in this case the whole keyboard is available for the character set.

TRANPRO can handle up to two different texts at the same time, using two different character sets – so at last you can translate from Russian into French if you need to! The screen can be arranged to display text in lines of 40 or 80 characters, so that a reasonable amount of each text is visible when two texts are on the screen at once. This has proved to be a boon, as you do not need to take your eyes off the screen to see both the source text and the translation. It is possible to "lock" texts so that they can be viewed but not edited, to avoid accidental altering of the source text, for example. Parts of one text can be transferred to the other text to save extra typing, and individual words or phrases can be directly copied from one part of the screen to another. This flexibility of the screen representation of text enables the user to concentrate on the task in hand, rather than having to wrestle with the drawbacks of the standard word processor. Search and replace facilities enable all the various forms of a root word to be found along with the ability to specify different replacement text strings at different points in the text, to deal with whole words or parts of words, to identify words only at the beginnings or ends of sentences or paragraphs, as well as other features.

## Dictionary look-up

TRANPRO also has access to on-line dictionaries to speed up the translation process further. Initial experiments suggest that the program can look words up around five times faster in an electronic dictionary than I can in a paper dictionary. Looking up a word is simple: placing the cursor under the relevant word and pressing a key will start the dictionary search. Alternatively it is possible to specify the word explicitly. Once a translation equivalent has been found, it can be transferred to the text directly. This obviates the necessity for typing the translation of the word given, or if the dictionary form is not the form required in the text, entry of the word becomes simply a matter of editing the dictionary form.

The dictionary for a particular language holds synonyms, antonyms, grammatical information, and semantic information relating to different meanings. If a word in the dictionary has more than one meaning, the various meanings are highlighted through synonyms so that the user can specify which meaning is appropriate. The translation equivalents are not held

in the dictionary itself: instead a "map" file is used to determine the correlation between translation equivalents in any language pair. This means that the system can cope with translation between, say, English, French and German with only one dictionary for each language, avoiding a potentially massive duplication of information.

Dictionaries are created, maintained and updated by using a separate program which comes as part of the package. The size of a dictionary is only limited by available disc space. New entries can be added at will, as can new synonyms, antonyms and translation equivalents. Similarly any or all of these items can be removed from the dictionary. Older versions of the BBC microcomputer support a limited number of files, and this restricts the system to one dictionary per language. Newer versions of the computer support a larger number of files, and this will enable future versions of the system to use terminological dictionaries alongside the main dictionary.

As mentioned above, TRANPRO is not designed as an automated translation system, but instead as a translator's aid which is always on hand. The requirements which led to

its initial conception were the ability to handle text flexibly and in a way which is natural for the user, not for the computer, and the ability to remove the less fascinating and more mechanical aspects of translation, leaving the translator, whether professional or student, to concentrate on the creative and judgmental side of translation. This philosophy has grown out of our work in Dundee, where we are now more than ever convinced that the way forward with computers is to exploit the strengths of the computer – speed, accuracy and patience – and the strengths of the human – creativity, insight and intelligence.

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