

Rapid post-editing of Systran

Elizabeth Wagner

Reviser, English Translation Division, Commission of the European Communities, Luxembourg

Experimental use of Systran French-English translation at the CEC has indicated that currently the most promising application of this MT system is for rapid, reduced-quality translations; in this case changes to Systran raw output are restricted to the absolute minimum. The reactions of translators and users to this type of work are described.

WORKING WITH SYSTRAN

Although we use Systran at the Commission, and have been doing so for several years, I think it is necessary to point out that it occupies only a very small place in our overall workload, both at individual level and in the translation services. Some of the translation divisions cannot use Systran at all, because of the restricted number of language pairs it covers.

At present, the European Community has ten Member States and seven official languages - Danish, Dutch, English, French, German, Greek and Italian. The number of possible translation directions, or language pairs, is 42 (see Figure 1).

The Systran machine translation system now in use at the Commission in Luxembourg works in three of these language pairs - English into French, English into Italian, and French into English - and is used in the French, Italian and English Divisions for part of their work in those language pairs. For all the other divisions, and all other language pairs, human translation is the only option. So there is no question of imposing universal machine translation at the Commission - Systran can only cope with part of our work.

Source Language

	Danish	Dutch	English	French	German	Greek	Italian
Danish	X						
Dutch		X					
English			X	F → E			
French			E → F	X			
German					X		
Greek						X	
Italian			E → It				X

Target Language

Total Language Pairs: 42

Systran Language Pairs: 3

(F → E, E → F, E → It)

Figure 1. Number of translation directions - CEC official languages

In the English Division in Luxembourg, Systran was first introduced for French-to-English translation in 1981, and has been used in various pilot schemes, so we are now well acquainted with the system and its uses and limitations. In 1982 the translation workload of the English Division was composed of the following: translation from French 45 per cent, German 31 per cent, Dutch 9 per cent, Italian 8 per cent, Danish 4 per cent and Greek and other languages 3 per cent (see Figure 2). You will see that translation from French into English accounts for the largest share of our work; at the Commission in Brussels, and in other Community institutions, the percentage of French-to-English is even higher. That is of course the reason why the Commission chose to develop Systran in this language pair. Of the French translated in the English Division in 1982, 11 per cent was translated by Systran with either full or rapid post-editing; this is equivalent to 5 per cent of our total translation workload.

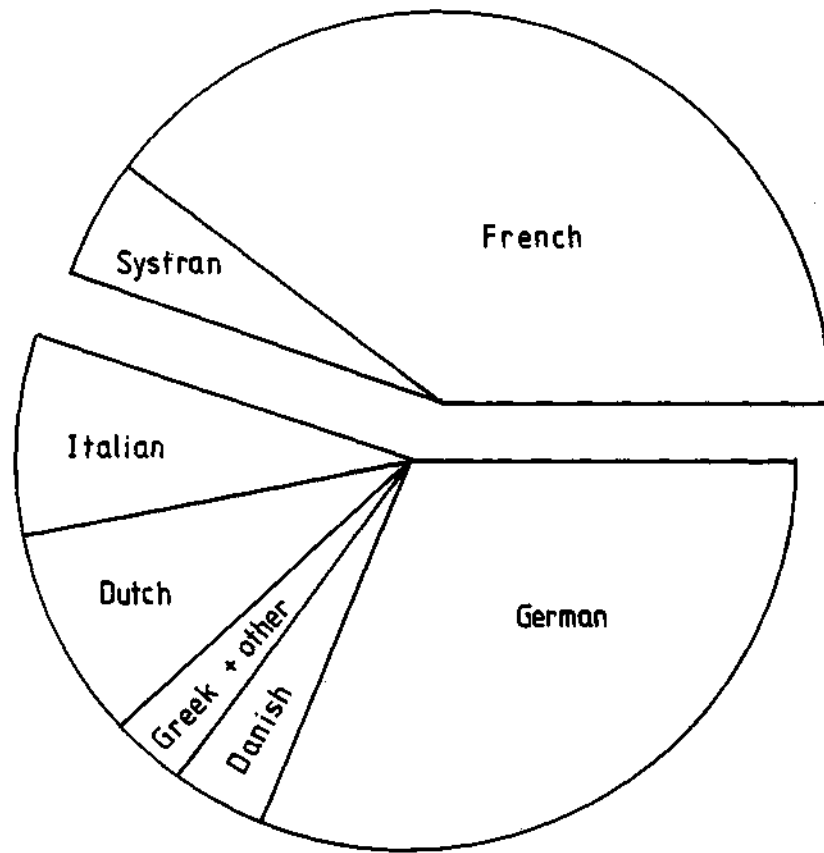
From now on I shall be referring specifically to the English Translation Division in Luxembourg, since this is the one where rapid post-editing has been most extensively developed. As yet there has been very little demand for rapid post-editing in the other divisions using Systran (French and Italian).

THREE PHASES IN THE USE OF SYSTRAN FRENCH-TO-ENGLISH MT

The introduction of Systran to the English Division was very skilfully handled to minimise translators' resistance and allay their fears. Throughout the various experiments conducted, the stress has been on voluntary participation, and different types of assessment forms have been prepared to record translators' reactions and comments. Our colleagues on the Systran Development Team, who are themselves professional translators, have always been extremely helpful and patient in dealing with translators' criticisms and feedback.

1. Introducing MT to translators

In the first phase, to show translators what the system was like, selected French texts were machine translated into English and sent to the translators together with the original; the translators were then free to choose whether to post-edit the raw MT, use it as a basis for dictation, or ignore it completely and translate in the conventional way - dictation and correction of typescript. At this stage the aim was to produce a translation of normal quality, which would then be revised. Translators had no access to word processing facilities, and post-editing had to be done by manuscript correction of hard copy.



Percentages:	Sysfran	5 %
	French	40
	German	31
	Italian	8
	Dutch	9
	Danish	4
	Greek + other	3

Figure 2. English Division - language composition of workload In 1982

2. Leaving the choice to the translator

Once the translation staff had gained some experience with Systran, the next logical step was to leave it to translators to request a Systran translation of any French text if they thought it would be useful as the basis for a normal-quality translation, which would then be revised in the normal way. This system is still in use, and we now have limited access to word processors and the chance to work on-screen, which is obviously the most efficient way of dealing with raw MT. However, there are very few translators who do choose to post-edit a raw Systran translation rather than translate in the conventional way, as the majority of them feel that Systran does not help them to produce faster or better translations.

Many, but not all, translators decided, after the first phase of the MT experiment, that Systran was not a translation aid, because they found that it took too long, and was too tedious, to convert raw MT into a translation 'to which they would be prepared to put their name'. Translators are not purists or perfectionists, but they see language as a means of communication, and they are painfully aware that communication can be impeded by a bad translation. Their work is constantly criticised, first of all by revisers, and then in many cases by translation users, and as a result they become hypersensitive to language. Translators are always aware of the reviser's red pen hovering over every word they write, and they are conscious that they have a reputation to maintain.

3. Leaving the choice to the translation user

We therefore decided to use Systran in a different way - to provide a faster translation service for those translation users who wanted it, and were willing to accept lower-quality translation. The basic idea of rapid post-editing is to restrict post-editing to an absolute minimum but to maintain comprehensibility and reasonable accuracy. These texts are never revised, and word processors are used as extensively as possible. The decision whether or not to use this faster service (and therefore Systran) lies with the translation user, not the translator, and the user is warned that the translation will be of lower quality (i.e. will possibly contain inaccuracies, grammatical mistakes and unclear turns of phrase). The project was explained to a selected group of translation users at the Commission, who were given samples of the sort of end-product they were likely to receive. When the project was presented to the translation staff it was well received, and thirteen out of thirty-five volunteered to do

this kind of work, on the understanding that they could opt out if they did not enjoy it.

VOLUME OF RAPID POST-EDITING IN THE ENGLISH DIVISION

The project started up in May 1982, and last year 11 per cent of our French-to-English workload was translated by Systran, 9 per cent with full post-editing and 2 per cent with rapid post-editing. This year, up to August, the figures were 4 per cent rapid post-editing and 12 per cent full post-editing, making a Systran total of 16 per cent of our French-to-English translation (see Figure 3).

EXPERTISE REQUIRED FOR RAPID POST-EDITING

It was interesting to note that the thirteen translators who volunteered to do rapid post-editing were all experienced staff, including three revisers; a certain amount of confidence in one's own translation ability and technical expertise is essential for this type of work. Just because rapid post-editing yields lower-quality translation, it should not be assumed that it can be undertaken by inexperienced staff. In fact it is quite the reverse - unless the post-editor has a high level of linguistic and technical knowledge he will not be able to post-edit the raw output to a reasonable standard in the recommended time.

The Commission departments we serve in Luxembourg all deal with fairly technical subjects - medicine, industrial safety, coal and steel, statistics, finance, nuclear safeguards and information science - and to enable translators to cope more efficiently with this wide range of subject-matter, each translation division has a system of specialised groups. In the English Division translators are divided into four groups: Economics and Finance, Technology, Information and Publications, and Social Affairs. There were volunteers for rapid post-editing from all four groups, but in fact virtually all the demand for rapid post-editing has been from translation users served by the Technology Group, and this is why some of us now have extensive experience of rapid post-editing, while others have not yet had any.

USE OF WORD PROCESSORS

Apart from an excellent knowledge of the source language (in our case French) and of the technical terminology of the subject-matter, post-editors should ideally have expertise on

the word processor. Our system is a Wang OIS 130 and everyone in the English Division who has tried it is very enthusiastic about working on-screen. We have found that translators are not at all 'afraid of computers', as is sometimes claimed - in fact both the word processing equipment and the Eurodicautom terminology data bank were very quickly accepted as genuine machine aids to translation.

Our word processors are under such pressure that some post-editors still have to correct raw output by hand, but this can defeat the object of the exercise, which is to provide a rapid service for the user.

METHOD RECOMMENDED FOR RAPID POST-EDITING

The main criterion in this type of work is speed. As a guide, post-editors were advised never to spend more than half an hour on any one page. When working on-screen it is possible to rapid-post-edit raw MT at a rate of four pages per hour. But this figure should be handled with care. Although we can and do process 40-page texts in two days, it is extremely unlikely that any translator would be willing or able to post-edit 160 pages in a forty-hour week. In our Division it is rarely possible to work on the word processor for more than four hours at a time, partly because it is not available, but even if it were, I think it would be difficult to maintain the required level of concentration for a longer period.

As regards the density of post-editing, it is difficult to lay down rules, as the number of corrections will depend on the individual post-editor's preferences and the quality of the raw MT, which can vary considerably. There has been a general improvement in raw output on the basis of feedback from translators, but a certain amount of time always has to be spent eliminating simple mistakes (pronouns, prepositions, possessive adjectives, etc.) in order to make the text intelligible.

An example of Systran raw output (in Figure 4) is shown on page 208. This is what we start with, and I personally find the best approach is to treat the whole thing like a game of Scrabble. I say to myself: 'Well, these are the words I've got - how can I rearrange them, with minimal changes, into something roughly approximating the meaning of the original French text?'

Like this example, most of the rapid post-editing we do is for the translation of minutes. These are always written in the present tense in French, but must be written in reported speech in English. The tense conversion is carried out automatically by a Systran sub-routine. This example

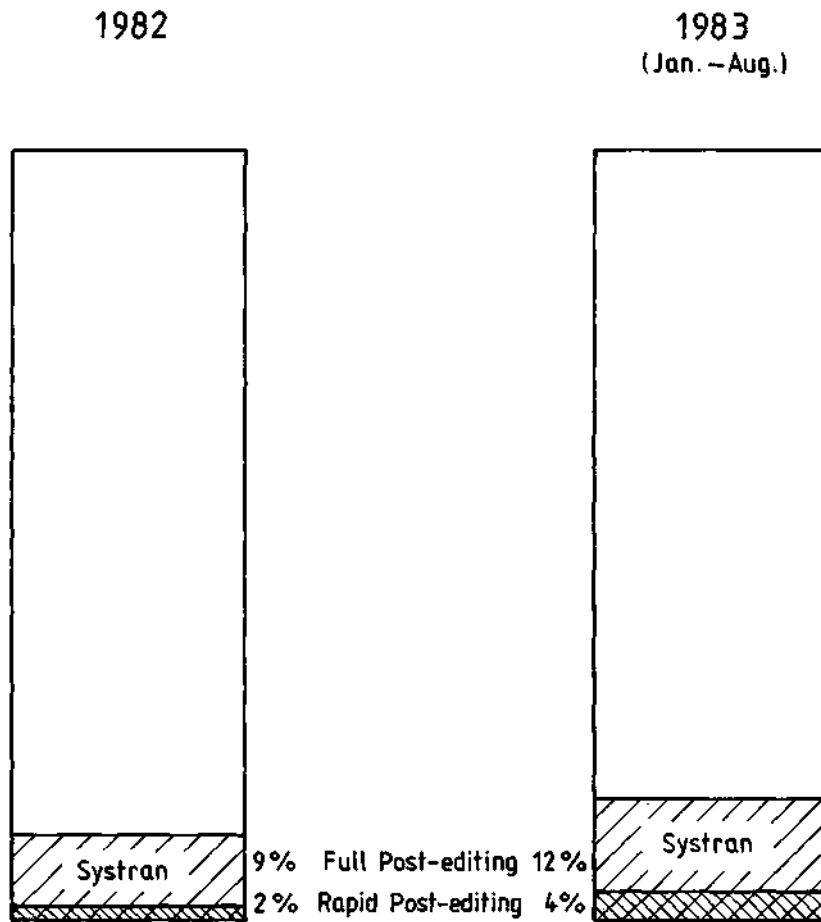


Figure 3. English Division: proportion of French-to-English translation workload translated by Systran

contains typical errors - incorrect pronouns and prepositions, mistranslation of the word 'joindre' - and the rapid-post-edited version shows a fairly typical post-editing density.

Apart from the common simple errors - simple in that they are easy to correct, but must nevertheless be corrected if the text is to be intelligible - there are always a certain number of errors due to mistakes in input of the source language. The input typing must be of extremely high quality, by native speakers of the source language if possible, as Systran cannot forgive a single error. Even a mistake in accentuation, or typing qu"on instead of qu'on, will lead to a not-found word which can affect Systran's syntax analysis. Mistakes in capitalisation can be serious too: in this type of text 'Commission' equals 'Commission' but 'commission' equals 'Subcommittee'. Although the number of corrections may seem high, most of the changes to the above text are straightforward corrections of simple mistakes, which can be carried out very quickly. Rapid post-editing becomes more difficult and time-consuming when the language of the original is more colourful and 'natural', as I shall now demonstrate. These minutes are written in French, regardless of the language actually used by the speaker at the meeting - in the first passage shown, the Chairman was speaking in German and so the language he used had already been 'pre-translated' by the French minute-writers, and any non-transferable German idioms will have been paraphrased, thus making this passage more suitable for machine translation.

A second example (Figure 5) is taken from the same set of minutes, but since it summarises a speech by a French speaker, the idioms have been reproduced, not paraphrased, and the language is generally more colourful. This is more difficult to post-edit, as it calls for genuine retranslation rather than straightforward correction.

VALUE OF WORD PROCESSORS FOR RAPID POST-EDITING

Changes can be made very rapidly using the word processor, and we have developed a number of automatic text-processing functions for post-editing, tailored to cope with Systran's most common mistakes. These can be used to improve layout, insert the correct titles of various organisations and committees, reverse words or rearrange them in other ways, and convert a phrase such as 'equipment of the office' to 'office equipment' with two keystrokes. The global change and search facilities also help to speed up work considerably. To save time, one can flag doubtful passages or terms as one goes through the raw

ORIGINAL FRENCH TEXT

Où en est-on, environ un an après la réunion du Comité permanent de l'emploi ? A l'époque, les organisations syndicales avaient estimé que la Commission européenne prenait le problème par le petit bout de la lorgnette, sans le situer dans le contexte d'une stratégie globale et d'une politique industrielle plus dynamique. Il faut partager le travail, réduire le temps de travail, mais ce n'est là qu'un palliatif.

En tant que syndicaliste réaliste et pragmatique, l'orateur se déclare prêt à manger des merles à défaut de grives. Mais va-t-on se contenter d'émettre des vœux ou de formuler des recommandations ? Cela ne serait que de l'eau bénite de cour, alors qu'il faut empoigner le taureau par les cornes, c'est-à-dire réunir les partenaires sociaux au niveau communautaire. En Belgique, le monde patronal estime être en avance en matière de réduction du temps de travail et, par conséquent, être désavantagé par rapport aux pays voisins. Une harmonisation au niveau européen est donc indispensable.

RAW SYSTRAN MT (underlined at places where changes were subsequently made)

HOW FAR was, approximately a year after the meeting of the Standing Committee on Employment? At the time, the trade-union organizations had felt that the Commission had taken the problem by the small end of the lorgnette, without locating it in the context of a total strategy and of a politique industrial more dynamic. It was necessary to share work, to reduce the working time, but it was there only one palliative.

As realistic and pragmatic trade unionist, the speaker declared himself ready to eat blackbirds in the absence of grives. But one would restrict himself expressing wishes or to making recommendations? That would be only of benite the water of court, whereas it was necessary empoigner the bull by the horns, i.e. to bring together the two sides of industry at community level. In Belgium, the employers' world estimated to be in advance as regards reduction of the working time and, consequently, to be handicapped compared to the close countries. A harmonization at the European level was thus essential.

RAPID-POST-EDITED SYSTRAN MACHINE TRANSLATION

What was the position now, approximately one year after the meeting of the Standing Committee on Employment? At that time, the trade-union organizations had felt that the Commission was magnifying the problem, without considering it in the context of a total strategy and a more dynamic industrial policy. It was necessary to share work, to reduce working hours, but that was only a palliative.

As a realistic and pragmatic trade unionist, the speaker agreed that half a loaf was better than no bread. But one must surely go further than expressing wishes and making recommendations. Those would just be empty promises, and it was necessary to take the bull by the horns, i.e. to bring together the two sides of industry at Community level. In Belgium, the employers felt that they had been handicapped compared to the neighbouring countries. A harmonization at European level was thus essential.

Figure 4. First example: original text, Systran raw output and rapid-post-edited MT

MT, and then go back to them later, after doing some research.

RESEARCH ON TRANSLATION PROBLEMS

With rapid post-editing, there is little time for research on terminology and background documents, and this is the main reason why the post-editors have to be experienced staff. But the texts for which rapid post-editing is most commonly requested (the minutes mentioned above) are always well documented and contain few serious problems of terminology. More complicated texts, for example coal and steel research reports, tend to fare very badly when machine translated, for two reasons. One is that they are difficult anyway - the subject-matter is too new to be covered by multilingual dictionaries or even by our standard works of reference such as Kempe's Engineers' Year-Book and periodicals such as Steel Times and Colliery Guardian. The other reason is - and for many translators this is Systran's main drawback - that machine translation is unreliable.

If the translator, or in this case the post-editor, is not sure of the meaning or the correct translation, he must ascertain it - by consulting colleagues, or libraries, or the Terminology Bureau, or even the author of the original text, all of which takes time. Only then can he judge whether the Systran translation is correct. In other words he cannot trust Systran to have got it right, and anyone who has any experience of technical translation will understand that it would be unreasonable to expect a machine to do so. So the various components of time spent on post-editing raw MT are as follows: correction of simple mistakes (pronouns, prepositions, etc.), correction of major mistakes (sometimes rewriting of whole sentences), research, and 'decision time' - in this case, deciding whether the raw MT needs to be corrected or is acceptable as it stands (see Figure 6).

TRANSLATORS' RESPONSE TO RAPID POST-EDITING

None of the original volunteers for this project has opted out, and on their assessment forms the post-editors usually rate rapid post-editing as 'an interesting challenge' or 'an acceptable piece of work'. It introduces a certain amount of variety into our work, and of course a welcome degree of independence, as this work is never revised. If there is a genuine requirement for fast, reduced-quality translation, the staff who volunteered for this project are willing to provide it, on condition that every translation is clearly marked 'rapid-post-edited Systran machine translation'.

Some concern has been expressed about the possible

ORIGINAL FRENCH TEXT

La séance est ouverte à 14 h 45 sous la présidence de M. XXX.

POURSUITE DE L'EXAMEN DE L'ETAT ACTUEL DES DOSSIERS :

a Réduction et réorganisation du temps de travail

M. le PRESIDENT rappelle que le problème de la réduction du temps de travail a été étudié à la réunion de Munich. Différentes thèses s'affrontent : pour les syndicats, la réduction du temps de travail contribuera à supprimer le chômage, mais les employeurs pensent qu'elle supprimera des emplois soit en renchérissant les coûts, soit en accroissant la productivité. Il serait souhaitable de poursuivre aujourd'hui cette discussion en laissant de côté tous les présupposés idéologiques. Pour commencer, il convient de demander au représentant de la Commission européenne, qui a réussi à rejoindre Luxembourg malgré un mouvement de grève à Bruxelles, s'il souhaite compléter l'exposé qu'il avait présenté à Munich.

RAW SYSTRAN MT (underlined at places where changes were subsequently made)

The meeting was open at 14. 45 with in the chair Mr XXX.

CONTINUATION OF the examination OF the CURRENT state OF the FILES:
with reduction and reorganization of the working time

The Chairman reminded the meeting that the problem of the reduction of the working time had been studied to the meeting of Munich. Various theses faced themselves: for the trade unions, the reduction of the working time would contribute to suppress unemployment, but the employers thought that she would suppress an employment either by increasing the costs, or by increasing the productivity. It would be desirable to continue today this discussion by leaving some on the side of all ideological presupposed them. To start, it was advisable to require from the European Commission representative, which had succeeded in joining Luxembourg despite a strike movement in Brussels, if it wished to supplement the statement that it had presented in Munich.

RAPID-POST-EDITED SYSTRAN MACHINE TRANSLATION

The meeting began at 14.45 with Mr XXX in the Chair.

CONTINUATION OF THE EXAMINATION OF THE CURRENT POSITION ON:
a) Reduction and reorganization of working time

The Chairman reminded the meeting that the problem of the reduction of working time had been studied at the meeting in Munich. There were various conflicting views: the trade unions claimed that the reduction of working time would help to reduce unemployment, but the employers thought that it might reduce employment too by increasing costs, or by increasing productivity. It would be useful if in today's discussion all ideological preconceptions could be left aside. To begin with, he asked the European Commission representative, who had managed to reach Luxembourg despite a strike in Brussels, if he wished to supplement the statement that he had presented in Munich.

Figure 5. Second example: original text, Systran raw output and rapid-post-edited MT

danger of general translation standards being lowered by exposure to MT. At present the volume of rapid-post-editing work is so small that this danger is non-existent. Even with more extensive exposure to MT the effect would be very difficult to assess objectively, as there are so many influences which can affect translation standards, not the least of which, in our case, is the fact that we live outside an English-speaking environment. In any case we are not 'translating into a void'; we rely on our users to tell us if what we are producing is unacceptable.

USERS' RESPONSE TO RAPID-POST-EDITED MT

As explained above, rapid post-editing is carried out only when users specifically request it and are prepared to accept a lower-quality translation. In other words the volume of this type of work is determined by the users, not the translators. At the Commission, the users of rapid-post-edited MT are very enthusiastic about the product, and particularly about the advantages of text processing facilities. There has never been any criticism of the lower translation quality. But the situation at present is that only a very small number of translation users ask for this service. There are several possible reasons for this:

(a) because the service is quite new, and is only available in the three language pairs covered by Systran;

(b) because the demand for this 'information-scanning' type of translation is relatively low at the Commission, where most translation users have a reasonable knowledge of French and English, the source languages covered by our version of Systran;

(c) because of the translation user's function at the Commission. Although I have referred throughout this paper to translation 'users', the term we use at the Commission is 'requesters'. The distinction is important. In many cases the translation requester is a sort of middleman: he does not need the translation for his own personal use, as he may be the author of the document, or may be perfectly capable of understanding the source language, but he has to distribute translations of working documents and minutes to national representatives on the committee or working party for which he is responsible. These committee members are the real translation users - the people who depend on us to provide an accurate translation of a 'foreign' text to help them in their committee's work.

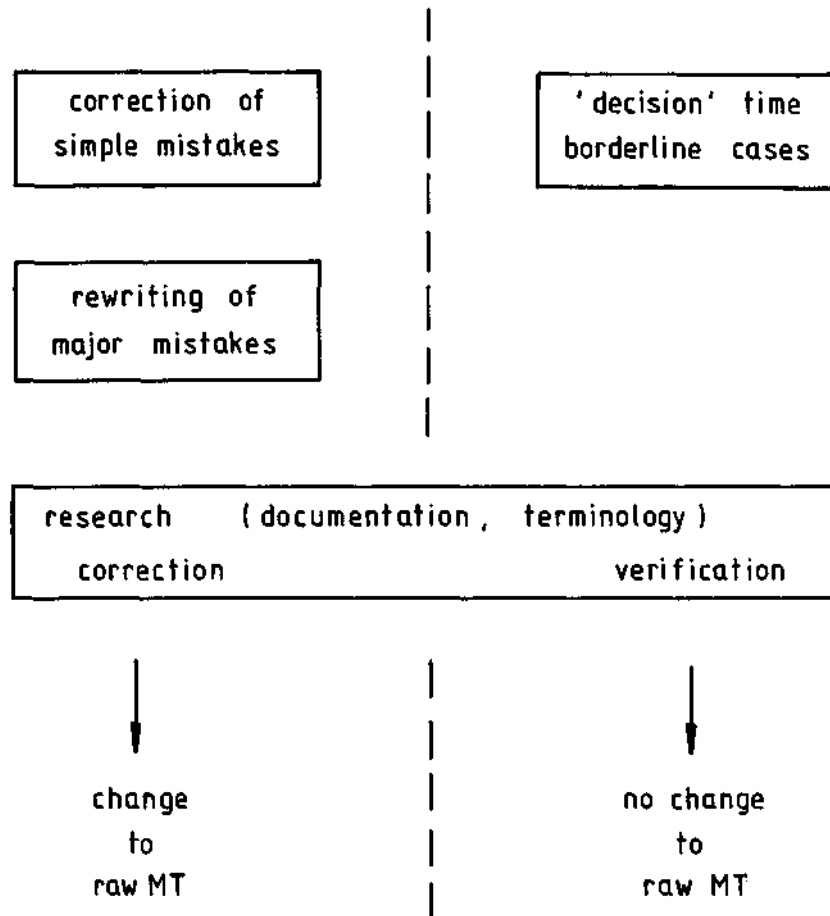


Figure 6. Components of time input for rapid post-editing

So the translation requester at the Commission may not be sure whether a rapid-post-edited translation will be acceptable to the end-users. And in cases where the requester does not know the target language well, and cannot judge the quality of the translation for himself, he will not want to risk sending out a lower-quality translation to his committee members. Ideally, the RPE requester should be a native speaker of the target language, and thus able to judge whether lower-quality translation is acceptable, or possibly to correct the terminology or improve the style himself.

FROM RAPID TO FULL POST-EDITING

Some people might ask why it is not possible to spend longer on post-editing and do a 'proper', rather than a 'rapid', job. This is a perfectly reasonable question, and indeed the small number of translators who request Systran translations themselves do exactly that, i.e. use Systran as a machine aid. However, it raises the central problem of MT acceptability for translators. Many feel that Systran is not an aid, but a hindrance, because it limits their freedom of expression. Translating is a creative job - the translator uses (a) his understanding of the source language to determine the meaning of a text and (b) his command of the target language to express that meaning, by creating a correct, faithful translation. If his range of expression is restricted in any way (cf. my analogy with Scrabble) he will not be able to express that meaning so well. After all, the fundamental limitation of Systran is that it translates the words, not the meaning.

CONCLUSIONS

To sum up, these are the basic requirements for a rapid-post-editing service in an organisation such as ours:

Translation users who are willing to accept a lower quality of translation, ideally native speakers of the target language;

Technical back-up: in addition to the Systran MT facilities, adequate word processing facilities and excellent typists for input of the SL text;

Post-editors who have extensive translation experience in the appropriate language pair and subject field, are willing to work on-screen, and are able to adapt their translation standards to the user's requirements.

AUTHOR

Elizabeth Wagner, English Translation Division, Commission
of the European Communities, Bâtiment Jean Monnet,
BP 1907, Plateau du Kirchberg, Luxembourg GD.