[From: *Aslib Proceedings* 34 (3), March 1982, p.160-172.]

The machine aided translator

Barbara Snell

Rank Xerox Limited

Paper presented at the fifty-fourth Aslib Annual Conference, University of Oxford, 22-25 September 1981

How can a translator's valuable time be saved by the use of electronic equipment? Modern aids—primarily word processors but also telecopiers, dictation equipment and optical character readers are examined. The translation process is broken down with examples, to establish which components can benefit from equipment available at moderate cost, Production time for supported and solitary translators is compared to establish possible time saving areas. Manual tasks undertaken by translator or secretary gain most from mechanisation but information search is also an important area for savings.

The translator

THERE IS A PAPER in this issue about translation on a budget. I hope you don't imagine that by implication a machine aided translator is an expensive translator. Or, should we say, expensive as translators go, for they are undeniably expensive, but who isn't? Who knows of a cheap plumber, gardener or electrician; to say nothing of a cheap architect, solicitor or private doctor?

Despite advertisements encouraging people to learn languages in 24 hours, without or by any other magic formula, I do not believe that there are any short cuts to acquiring a good knowledge of a language, and the years of education, training and experience that go into producing a translator are equal to those required by the traditional 'professions'.

It cannot be said too often that a translator not only needs to know the foreign language, he must have an excellent command of his own. His work should read like that of a good technical writer—an expert in his field. The third area of expertise required of a translator is his special subject and by whatever combination of study or experience he has obtained his knowledge, it will have been no less of a long, hard slog than that of any other professional expert, which makes him, 'an expensive person'.

A translator may be a self-employed freelance or he may be employed by a company, government department or other organisation. People often imagine that staff translators only work in narrow fields. That may sometimes be true, but I suggest that more often it is not. In fact, freelances are likely to have a narrow speciality while staff translators frequently have to tackle just about everything that lands on their desk: admittedly they have the advantage of access to specialist colleagues, often on the premises.

Unlike the purely oral activity of interpreting, there is also an element of manual dexterity required in producing translations. A translator should therefore, combine both physical and mental skills, (Fig. 1). I shall not suggest improvements to, or

Aslib Proceedings, 34 (3), March 1982, p. 160-172. Printed in Great Britain

replacement of, translator's thought processes and will leave others to talk of brain transplants or machine translation, these are not my themes. I should like to concentrate on what we can do to improve and facilitate the manual task of getting the text to the user as efficiently as possible. This is where I see machines aiding translators.

MENTAL SKILLS	1. FIRST LANGUAGE (language of habitual use) 2. FOREIGN LANGUAGE 3. SUBJECT KNOWLEDGE
PHYSICAL SKILLS	1. HANDWRITING 2. TYPING 3. DICTATION

FIG. 1. *The skills of a translator*

The translator's tools

There is nothing new about translators using machines and other aids: Let us assume that we already have a typewriter, electric in preference to manual—carbon ribbon looks better than fabric—a self-correcting ribbon is a great improvement on Tipp-Ex; cut and paste combined with photocopying machines can save retyping and Snopake is a boon; telex is convenient for transmitting written messages and the telephone for oral communication; dictionaries and other forms of reference are essential for providing information; filing cabinets contain carbon or photo copies of our past history and finally—the friend we love to hate—the GPO provides our postal services. But all these can be largely superseded by one piece of equipment: the word processor.

As I see it, the whole point or advantage of a translator's aid is to do just what the name implies, i.e. help him. Help him to realise his full ability and potential, help him to make the most of his time and skills. We will discount those who translate for fun and concern ourselves with translators engaged in earning their living and providing a service.

Some jobs are best performed by handwriting: marginal notes, jottings and quick translations scribbled on drawings, etc., so long as the writing is not indecipherable, replacing one form of obscurity by another. Quickly typed translations alongside the original, in red for clarity, may be perfectly adequate on telexes, memos and short letters, but discounting such items, the bulk of our work usually consists of long and substantial texts when the physical production of the job may take as long as the actual translation process, i.e. half the translator's time is taken up with the relatively unskilled manual job of producing the work. This is where machines can help, so let us take a look at some of the electronic equipment currently available to translators, by which I mean, within the price range of a normal office or freelance budget.

Word processors

The term 'Word processor' covers machines ranging from little more than electronic typewriters which might retail for £1,000, to large computerised text handling systems

costing £100,000 or more. Some are combined with mini-computers while mini-computers themselves, usually possess a text processing capability. Basically they all have facilities for entering, storing, retrieving, editing and printing text.

Input is via a conventional keyboard with a number of additional keys. Stored memory might be just a few lines, in the machine itself, which makes a laborious job of editing and revision; or it could be virtually limitless in the form of hard discs; but floppy discs which lie between these extremes are the most commonly used form of storage. On the simplest machines the only display is the paper output; and while useful for standard letters and so on, this equipment is limited in its use for translation.

A word processor with a thin window display showing one line of text, is the next step up the ladder. It will cost around £3,000 and can be immensely useful. You can correct typing slips immediately by backspacing and overtyping, they thus never appear in the text and you can also have painless second thoughts regarding the phrasing of the last line of your translation.

But once you have used a screen display I suspect you will never want to return to the limitations of a line display machine, although this increased facility will add another thousand pounds or two to the purchase price. Screens usually consist either of a 24 line half page or a full 66 line A4 page. You pay less, but not half, for a half page display—the price might be reduced by about a quarter, which is quite a consideration; and for translation purposes, where layout is not vital, I would say the saving is worth while.

A word processor with a visual display unit (VDU) no longer resembles a typewriter, it has turned into a very different animal which will involve certain changes in your office layout. The machines we have referred to so far have consisted of what looks like a typewriter and a box containing the 'brains', called the central processing unit (CPU); but you now type on a slim keyboard which, according to the latest recommendations, should be no higher than 30mm (1½"), so you work almost on a level with your desk; your output appears on the VDU, like a small TV screen but with better resolution and we trust, no flicker.

In all current word processors you can place the screen where you like in relation to the keyboard. I do not like the VDU in front of me as I prefer not to look while I am typing, but this is a matter of choice. These two items comprise your work station. The other two units may be solely for your use if you have a 'stand alone machine', while if you use a 'shared resource system' the CPU and the printer could be shared with as many as 30 other operators. If these are in another room your work station will take up very little space. The printer itself is the size of a typewriter and is certainly no quieter, but the keyboard is silent except for a slight clicking. Noisy printing time is short and there is no need to work near the printer as it can be placed at a distance.

Storage will probably be on floppy discs, one or two sided, either 8" holding 120 pages of text, or 5", correspondingly cheaper, with less storage space. For large volume storage, especially using shared resources, hard discs holding many thousands of bytes (units of stored information) will be needed, replacing your filing cabinets and carbon copies.

You will need to develop a system for identifying your discs and the 'documents' they contain, but that is all you need to do, for the discs themselves hold their own record systems. It is a matter of seconds to call up the document you want on the

screen and only as many minutes to print it out. Strictly speaking one should not refer to 'documents' as your text does not exist in any tangible form, but I find the familiar concept easier to grasp.

Communicating word processors

A further feature of word processors which should be mentioned is the communications facility. Your machine can be connected either through a computer network or via a modem, currently installed by the GPO, linking you to any other compatible machine; at the present time unfortunately, there are still far too few of those.

Text communication opens wide horizons to translators. Picture the convenience of transmitting documents direct from one typewriter to another in the different locations of multinational companies; from freelances to their clients; between colleagues to ask an opinion of a text, and so on.

The future prospects for networks to which all kinds of electronic equipment can be connected are very far-reaching. Facilities are available for electronic mail and a paperless office. In fact, one wonders whether future generations of office workers will even need to learn to write. But as translators are unlikely to link up their own networks within the next few years we will not look at the implications of these developments.

Other modern aids

I should like to step aside from word processors for a moment to mention some other aids:

Telecopiers

While on the subject of electronic communication, telecopiers are of enormous benefit in transmitting material not written in the Roman alphabet. Word processors have been developed which can handle Arabic and Cyrillic alphabets, and most can accommodate the umlauts, accents, other diacritics and special letters in the Western European languages, although it may mean using a different print wheel. Ink jet printing extends the scope of printed output beyond that of the daisy wheel and there are machines which produce graphic displays.

But there is no avoiding the fact that we sometimes need to copy material such as diagrams and drawings which can only be transmitted by facsimile machines. Models are on the market for around £3,000 which will send a stack of up to thirty originals automatically and receive unattended, like a telex, but without the imponderable element of operators' fingers. You can use a telecopier as an ordinary copier—should you not have one—but it is difficult to imagine an office nowadays without a copying machine. Whether you rent or hire, feed in the originals or have a flat platen will depend on your purse and your requirements, but I will not dwell on copiers and duplicators as these are machines which I assume are familiar to you all.

Dictation equipment

Dictaphones are popular for high volume translators, especially those who have never learned to type efficiently. Few people type well who have not been taught touch typing (men in particular have often not had an opportunity to learn). I find typing

with eyes shut or without looking at the text, much more relaxing than looking at the keys. Translators usually favour foot controlled microphones which leave the hands free. Sometimes pilot-type headsets are used to great advantage permitting unfettered access to the bookcase while dictating. It should not be forgotten that if ambiguities are to be avoided a good clear voice is essential for dictation.

Many translators with secretarial support achieve very high output with dictation equipment. Here translating almost approaches the technique of interpretation, where the job is entirely oral. But so long as the translator has the final responsibility for the presentation of his text we must still regard him as requiring physical skills, even though he may delegate them to someone else.

Optical Character Readers

Optical Character Readers (OCR), machines which can read texts and print out or transfer onto a disc, have been in use for some time. I first became aware of their existence from the grotesque figures indicating the account number on cheques. Special golf balls and daisy wheels have been produced for optical character reading but machines have now been developed which can read any typeface, including Arabic and Cyrillic. They are still extremely expensive and are an aid to, or replacement for, the work of secretaries rather than translators.

Machine translation

There are systems of semi-machine translation which replace one language with another with varying degrees of success, leaving the translator to edit the results. Software for this purpose, used in conjunction with various combinations of computers, dictionaries and word processors will, without doubt, play an increasingly prominent role in the translation scene in the future. But the cost of such packages puts them beyond the scope of this talk.

The next logical step would be to examine machine translation itself which threatens to replace, at least in part, the work of the translator, but this topic can hardly be regarded as coming within my brief.

The translation process

Let us take a look at how a translator actually uses a word processor in his work: Fig. 2 shows a German paragraph which I translated recently in the context of a specification for VDUs in offices. For those of you who do not know German, Fig. 3 gives the equivalent English words much as you would find them in a dictionary, with a few minor changes in the word order. Although the words are English they are not a translation of the original as they do not convey the meaning intended by the German writer.

If you did not know much German but you tried translating this text with the help of a dictionary, you would sometimes be faced with difficult choices. What are we going to call 'Arbeitsmittel', literally 'work means'? Which of these words is appropriate for 'Anordnung'? Arbeitsvorlage, as you can see, could mean a number of things. It is often the simplest words that provide the greatest headaches. If you are thoroughly familiar with the subject, the margin of error of your choice is narrower.

Die Abmessungen von Bildschirm-Arbeitstischen müssen den ergonomischen Erfordernissen entsprechen, so dass stark ermüdende oder gesundheitsschädliche Körperhaltungen vermieden werden.

Die Tischflächen müssen eine flexible Anordnung der Arbeitsmittel Bildschirm, Tastatur und Arbeitsvorlage bzw. Vorlagenhalter zulassen.

Bildschirm-Arbeitsplätze, an denen handschriftliche Eintragungen vorgenommen werden oder mit grossformatigen Arbeitsvorlagen umgegangen wird, müssen mit Tischen ausgerüstet sein, deren Platten mindestens 1200 mm breit sind.

FIG. *2. German paragraph for translation*

The measurements of viewing screen work tables must correspond to the ergonomic requirements so that strongly tiring or harmful to health body positions will be avoided.

The work table areas must allow a flexible arrangement of the work screen, keyboard and work presentations respectively presentation holder.

Screen work places at which handwritten entries will be dealt with or where large format work presentations will be worked with must be equipped with tables whose plates are at least 1200 mm wide.

Anordung—direction, disposal, order arrangement, regulation, instruction
Arbeitsvorlage—not found in dictionary, but
Arbeit—work, and
Vorlage—filing, submission, presentation, pattern, model, original, copy, bill

FIG. 3 *First version of translation*

Having looked at the translation again, played the tape back or let it go through his mind once more, the translator might decide on a second version, necessitating re-recording the tape if it was dictated; crossing out the draft or retyping if the 'final' translation has been typed straight on the machine; or mentally rearranging the text, which involves a high degree of memory and concentration. But however he worked, an experienced translator would soon end up with something like this second attempt in Fig. 4, either in his head, on paper or on tape, depending on his method.

The measurements of viewing screen worktables must correspond to the ergonomic requirements so that body positions which are very tiring or harmful to health will be avoided.

The work table areas must allow a flexible arrangement of the work screen, keyboard and work document and document holder respectively.

Screen work places at which handwritten entries will be dealt with or where large format work documents will be worked with will be equipped with tables which have surfaces at least 1200 mm wide.

FIG. *4. Second version of translation*

Take a closer look at this translation: One does not expect a well behaved audience, such as yourselves to heckle or throw tomatoes, but you might justifiably feel indignant, at the standard of work I have served up to you as a model. You could object that it is not normal English: 'Screen work places' sounds odd. The passage is cumbersome and repetitive, it doesn't make much impact even after reading twice. If you voiced your doubts I could ask, 'What's wrong with it?' That is not so easy to pinpoint. I could say of every word, 'It's in the dictionary and "they" should know'. If it is long winded, 'Well, so was the original, that's not my fault, I'm the translator, not the author.'

But we have said that we expect a translator to produce a text which reads like a piece of skilled technical writing written by an expert in his field, at best, if the translator is a specialist; or at worst—if he merely has a good technical background—slight allowance can be made. If the document is to be printed in the form of publicity or prestige material it will in any case, be edited by a specialist expert. The editor should have no doubt as to the meaning of anything in the translation and as a non-linguist he will not be able to refer to the original foreign text so the entire meaning must have been conveyed fully by the translation.

Having completed the text the translator may realise that where he used 'document holder' in Chapter 1, in Chapter 5 it is clear that the object, should be called a 'stand'. I used 'work place' but later found I needed to refer to 'place of work' as it fitted better, so decided to call 'Arbeitsplatz' a 'work station'. A number of words in the passage are unnecessary. The whole paragraph needs rewriting. There is a typing error and a spelling mistake; some sentences are long and ambiguous. I could do one of several things:

(a) leave it as it is—after all it conveys information;
(b) change the worst points and some of the words with Snopake;
(c) retype certain pages;
(d) edit the whole job and send the text back for retyping or retype it myself.

This latter procedure is absolutely essential for a good quality translation.

Many people claim to do a once only job—I do for much of my work. But I do not pretend that the result is anything but a draft. Without rewriting it will be not a piece of good English, though it often has to do duty as such.

To avoid postures harmful to health or liable to cause excessive fatigue, dimensions of VDU desks must conform to ergonomic requirements.

Desk tops must allow versatile layout of screen, keyboard and documents or document stand. VDU work stations must have desk tops at least 1,200 mm wide if they are intended to be used for handwritten entries or large format documents.

FIG. 5. *Final version of translation*

In Fig. 5 we have a final version which I hope you find conveys the meaning more readily than the last effort, and that is what it is all about.

The time factor

How does our expensive animal, the translator spend his time at work? The chart in Fig. 6 shows the stages which are likely to be involved in the manual production of a translation whether handwritten, typed or dictated. This is an important area where electronic machines can save valuable translator time.

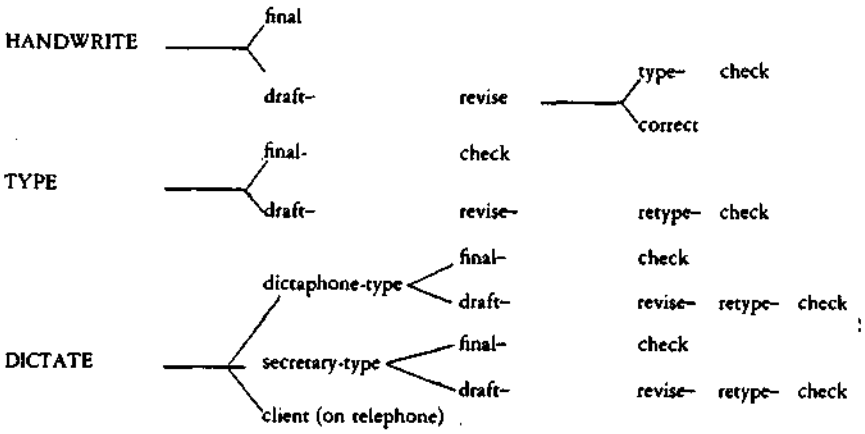

FIG. 6. *Production of a translation*

Another area is in obtaining background information: We will say the subject is new and the translator needs to read up on the subject. We can continue with the text

I translated recently on 'Measures to prevent eyestrain from the use of VDU's': No one should have to turn down a job like this because he is not an expert in the subject. It is a new field and any translator with a reasonable amount of experience should be able to tackle it.

Our library provided me with a Health and Safety Executive paper, a booklet produced by the Association of Optical Practitioners, a leaflet from one of the trade unions and an article from a journal. Depending on the level of support he enjoys, a translator might have the important or relevant passages and useful vocabulary items highlighted for him, saving a great deal of time, as background reading and searching for terms can be very time-consuming.

An extreme example was my quest for optical terms in connection with this job. Medical translator colleagues had no experience of texts on eyes and the local optician was no help either. Extended research by our German office did not produce the English terms, they ultimately gave me the name of a Harley Street specialist whom I hesitated to contact. After several phone calls to Moorfields eye hospital I found most of my answers and they put me in touch with a professor of ophthalmology who sorted out the last query. But it had been a long process, expensive of many peoples' time besides my own. Online access to an appropriate reference would have been worth a great deal on that occasion. A freelance translator recently stated that 10% of his total time and 5% of his total income was spent on obtaining and filing reference material and it could easily be more with the increasing proliferation of material.

The clock charts in Fig. 7. give us an idea of how a translator might use his day. We compare a lone translator and a highly supported translator. You might well have a supported freelance and a lone staff translator or vice versa.

The translator receives the job at 12 on our clock.

Having obtained the necessary information, or had the subject researched, the translator reads the text through, studies it, and starts or continues a glossary (which is added to throughout the job). The time spent on this stage will clearly vary enormously, depending on the familiarity of the translator with his subject.

Work on the text starts with initial typing, dictating or drafting; this includes dictionary look-up and glossary compilation; the time required clearly also varies. This is the translator's production time and is often only 50% of the total working day of an unsupported translator, though it should clearly be more if assistance is available.

Revision is the next stage and it involves reading through, revising, checking and correcting the draft; this may take longer for those checking a typist's work, depending on the typist! More checking time is probably required if translation has been dictated.

This is followed by retyping or correcting.

Finally the checking stage, which will need to be more thorough for retyped translations as new errors may have been made.

The chart also shows us the same job done by a translator, with or without a secretary but with a word processor.

Assuming that online search and information retrieval is available we can considerably reduce the time required to obtain information and terminology, especially if the secretary builds up glossaries from words indicated by the translator.

Typing time is less than before, due to the ease of correcting slips—especially valuable for a less expert typist which the translator is likely to be.

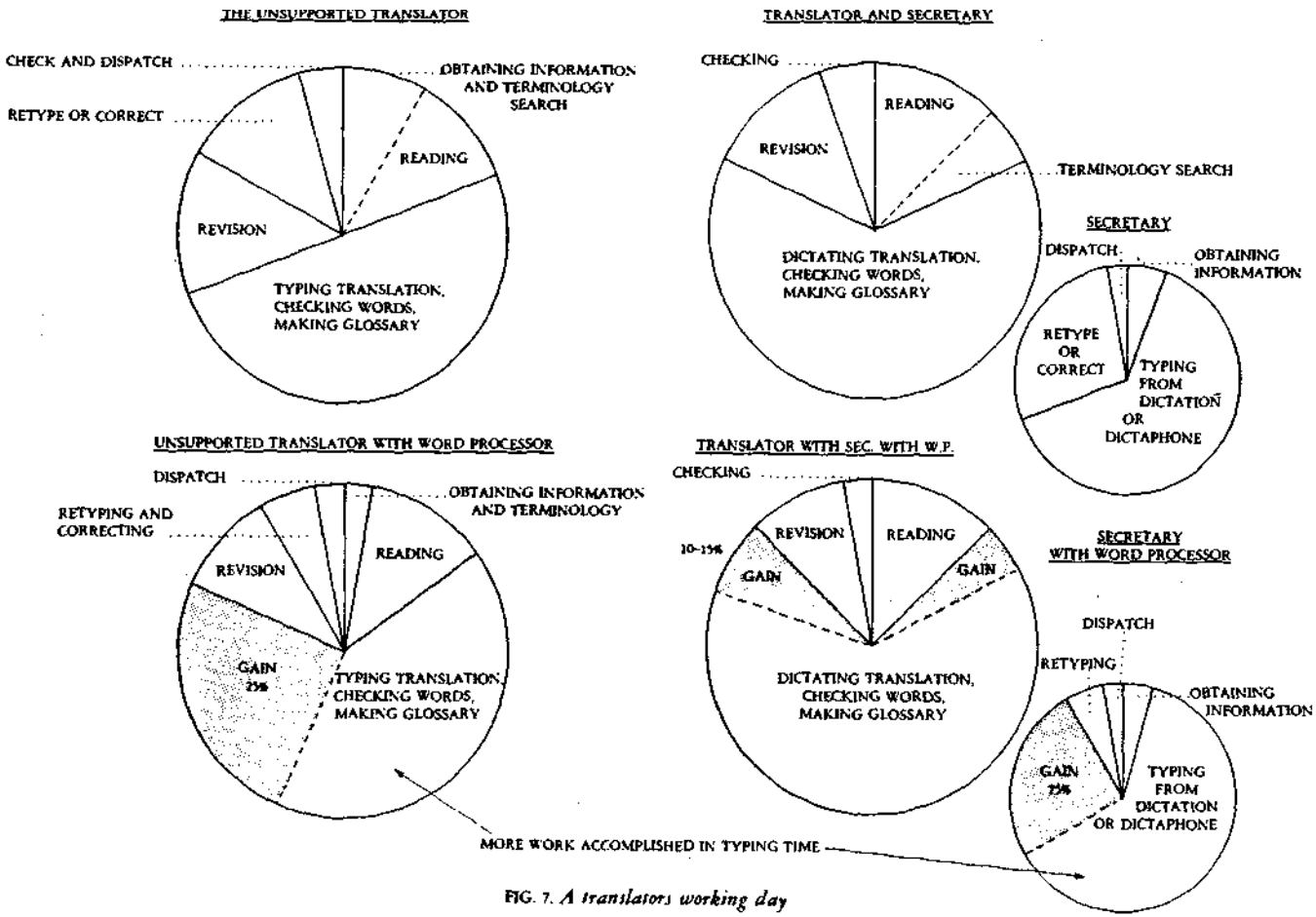

FIG. 7. *A translators working day*

Revision time is the same if we are working from a paper printout of the text, I do not like undertaking lengthy revision on the screen, although this is perfectly possible and would clearly be quicker.

Retyping and/or correcting is where we gain the most time but final checking is also quicker for only revised material and previous errors will have been retyped. Revision marks can be inserted on a draft printout indicating where changes have been made in the text.

Freelance and secretary time is required for dispatch, logging, invoicing, addressing envelopes, etc.—the latter job will not be done by a WP, the typewriter is still needed for some things.

The cheese charts indicate a 25% time saving for the unsupported translator and secretary while the supported translator himself might save at least half that, in addition to the gain in secretarial time. Using a secretary saves more expensive translator time, but due to high overheads and the cost of employment the current trend is to not support expensive people with cheaper assistants but to reduce the employee numbers. Actual figures must clearly vary greatly but I would be surprised if a saving of at least this order could not easily be made with a word processor after the initial training weeks.

What a word processor can do

Those of you who are familiar with word processors will not need reminding of the useful features they offer but for those to whom this type of equipment is new I will just mention a few of what may appear fairly obvious facilities:

Presentation of typed text is always immaculate; your documents are invariably of camera-ready print quality with the facility for right hand margin justification. The more you pay for a printer the better the appearance of your finished work.

Headings can be centered at the touch of a key. Type faces are governed by the daisy wheel which can easily be changed, although one does not want to have to do this too often in any one text. The layout can be altered in a flash; you can do your draft with double spacing and then single space for the final text. Block spaces can be left in the text for diagrams and comments such as instructions to the typist can come up on the screen but not print out.

Easy revision means that you can change your mind as often as you wish, but resist the temptation to keep revising just because it is easy, or you will lose the time saved by the word processor.

Indexes and glossaries

Indexes are likely to be of particular interest to librarians, while translators are probably more concerned with the compilation of glossaries and rapid reference to them.

This is an area of great scope for future progress. Any translator of more than a few years' experience will have acquired a collection of terms, glossary lists and useful translations relating to specific fields of activity. Organizing and retrieving this information becomes increasingly difficult as the lists grow and we all look forward to the development of new methods of sorting, storing and accessing our glossaries.

The average word processor will not file terms alphabetically but when the

vocabulary is printed out it is not difficult to decide where a word should fit. Tell the machine to 'search forward' to the next word and simply type in the item in its place. A word list can be compiled for each job as you go along, modified as required, with a copy filed for future reference with the translation. All the individual word lists can go onto a master glossary disc which becomes the translator's personal dictionary, updated and printed out whenever required.

Online

As you are well aware, we can now go online to hundreds if not thousands of sources of information all over the world, and I need not stress to you information specialists what fields will be opened up when more information is available to more people. At present the boundaries between Prestel, Ceefax and Oracle-type screen based information and word processor VDUs are clear-cut: TV screens are in the home and VDUs in offices. We can only hope these distinctions will soon disappear.

You are doubtless more aware of the pros and cons of online information search and retrieval than I, so I will not dwell on this topic other than relating the cost to translator time. The relevant costs are the purchase of equipment; telecommunication time, which depending on the network or system used, can vary from £5 to £50 an hour; naturally the longer the distance the more you pay. Access charges to hosts are even more difficult to quote, as is the price of hard copy output, should you require it. But the value of interactive interrogation of such bodies as the International Atomic Energy Agency can only be assessed by the individual in question.

Term banks

Translators dream of a data bank available at their elbows, to which they can turn in the knowledge that they will find what they are looking for, including definitions and examples of use, plus foreign language equivalents. If a term bank is interactive and the required word is not found, the bank should make a note of it, ask for details of where found and rapidly come back with a suggestion, if not an authoritative answer. The term can then be entered provisionally and further requests for the same term will help to clarify its usage. In due course it will cease to be a provisional term and will become standard.

If everyone referred to the same bank we would avoid the proliferation of misunderstandings and shifts in meanings of new coinages. EURODICAUTOM has made a start in this direction but there is still a long way to go before one can obtain the information one wants and no more. The term bank will have to be vast if it is to contain all the words that we will need, but computing and storage costs are falling, in real as well as in relative terms. Such a bank will be with us one day if only we can agree on the input. It is a sad reflection on the human race that man has the wits to invent such a marvel but lacks the ability to cooperate with his fellows on its use.

The customer

We are at a very exciting moment in the development of text handling equipment. Every day is market day, everyone is rushing to proclaim the special features and

advantages of their machines. But 'caveat emptor': discs are not interchangeable, one system will not talk to another; if you have learned to use one model you will not be able just to sit down and immediately use a machine made by another company. Many models will be squeezed out of the race; it is up to the consumers to make sure that the best ones survive.

In the future we shall doubtless find more compatibility and less diversification in equipment, not I fear, from a desire on the part of the manufacturers to be helpful but from consumer pressure. You, the customers must use that pressure wisely, think and try before you buy. Make sure you are getting the very best equipment available for your particular purpose even if it means spending twice as long studying the market as you thought you would need to. I have said in the past and I say it again: If you regard the purchase of a word processor in the same way as you would regard a car, you will not be far out. The cost will be comparable, but from the point of view of financial benefits, the word processor wins all along the line.