

CONCLUSIONS

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Nine years ago, at a much larger and wider-ranging conference here in Luxembourg, I also had the privilege of summing up what was then a week-long sequence of papers exploring innovations for overcoming the language barrier. That week in 1977 was also the occasion at which Systran was presented to a wider European audience. We have come a long way since then and we have now enough to say about Systran to occupy two days of plenary sessions and two days of workshops.

Let me step back for a moment or two, and take a more distant and broader view of this situation. As chairman of the advisory committee which for the last nine years has monitored the development of Systran in the Commission, I know only too well the considerable efforts made by the development teams inside and outside the Commission, the hesitation and initial reluctance by translators to use the system, the excessive zeal reflected in some reports and the caution of the advisory committee every time a new language pair was proposed for development.

The result of this tension was a step by step approach which did not threaten translators, overtax human and financial resources available at the time or permit exaggerated claims of success which have in the past done so much damage. Instead, expansion of the system had to keep pace with the training of personnel for system development, the creation of a suitable infrastructure and the most important preparation of the psychological climate for accepting machine-produced texts.

It seems that all this has turned out to the best in the best of all possible worlds and I believe that this gradual approach to the introduction of machine translation in the EC and Europe has done the general cause more good than harm.

Systran is alive and well in the Commission, in Europe and the rest of the world, despite some dire predictions, made by assessors in the early trials and evaluations. It is being used, perhaps not by as many people as some of us would like or we believe the system capable of, but it is also used in more different ways than any of us envisaged ten years ago. And its use may yet be extended in ways which we are reluctant to predict, seeing that we did not do too well in our earlier estimates of possible uses.

The European Communities and the Commission in particular are a powerhouse of multilingual activity. As possibly the largest concentration of translators, the Commission plays a very important interlingual communication role in Europe. It receives documentation and other input from a great number of sources - not like the United Nations just from national governments and its own agencies - and it addresses - again unlike the UN - every individual in the European Communities, formally through its Bulletin, and through the many other contacts it has at all levels of organized human activity.

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The institutions are themselves an example of multilingual coexistence and collaboration and the regular contacts with every sphere of life in the Member States ensures that there is a steady flow of genuine language back and forth through the filter which every mediation service inevitably represents.

In a badly run, hermetic, inward-looking service this filter of translation and to a lesser extent interpreting, distorts the outflowing information and we have had warnings of Europeak, Euroenglish, etc. In a well-run service, which I know those of the Institutions to be, there is a lively awareness of the need for translation services to have their antennae tuned to all manifestations of language so that the texts produced in the Institutions - of which some 90% or 8/9 can be said to be the result of translation - are all as fresh and genuine as any texts of comparable pragmatic impact written in the language of the Member States.

In fact, the success of the European enterprise relies essentially on good communication, which in this context means the quality of text or translation. In order to overcome national resistance to change, which is in the common interest, it is not helpful if the legislation, directives, regulations, etc. are recognizably alien in expression and form. On the contrary, for maximum acceptance the Official Journal, for instance, should in appearance and language be indistinguishable from the best publication of similar use in the Member States. And this can only be achieved by an openness to outside language influence, by an extreme caution in the prescriptive use of language and now - here we come to the theme of the conference - by non-exclusivity in the automated support because it may influence the form and content of the texts output by the computer.

The actions of DG IX (Personnel, Administration and Translation) and of the Directorate for the Information Market and Innovation of DG XIII over the last ten years reflect a policy which - though never formulated as such - has combined the search for improvement in the information transfer between languages inside the Commission with a desire to serve multilingual communication at large. In fact, such is the nature of communication that pursuing one objective cannot properly be done without serving the other.

Let us now examine the papers of the conference itself. I have singled out three major topics for detailed discussion, but would like to clear up a few minor issues first.

It is necessary to explode the numerical myths of the sales talk that still surrounds presentations and discussions of Systran and other machine translation systems. I need only two examples to make my point. The first is the statements made about the speed of machine translation. Figures like 1500 words per minute were given and comparative values of between 25 and 700 times faster than the human translator. Other claims speak of doubling or trebling a human translator's output. All these figures are irrelevant. We know that machine translation is faster than human translation and that is enough. Speed may be relevant in on-line interactive systems, but it is always much faster than the associated human-controlled text processing. Only when this and the administration surrounding ordering translation are faster than the machine, does speed really become relevant.

It was after all very informative to hear that in some cases ordering machine translation still takes two months and that this problem is serious enough for some to be considering introducing Systran on a microprocessor for selfservice use.

The second useless figure I want to abolish is the magical 95% of accuracy, intelligibility, quality, etc., that is so often quoted as the ultimate goal. The figure itself is again quite meaningless: 95% of what are we talking about and compared with what 100%? It cannot be the human product - it is simply not comparable - and the alternative of the desired machine translation quality is meaningless as this is a relative value. Of course, we want to be able to express progress in system development, but should we then not speak of a percentage improvement against earlier versions? There is no meaningful numerical value for the criteria which really matter, such as acceptability to end users and usability by post-editors.

I also want to comment on what I perceive as an apprehension by some translators: that an all-powerful and exclusively used machine might impose a very strong normative, even prescriptive influence on translation and translators. This fear is quite real when we consider that an exclusively-used machine would offer all translators and post-editors the same draft translation. The more widely used one system becomes in one organisation only, the more danger there is for an idiosyncratic development of the syntax and dictionary equivalents in a translation system.

I am happy to note that the recent decision to make the Commission Systran available to a number of service centres, which will share in the further development, makes these apprehensions groundless. The influence exerted by a number of national government users will ensure that Systran will at all times remain open to the genuine usage of all Community languages. It will become a more complex but also a more flexible system and we have to see how widely the system can be stretched to accommodate all the new demands made on it.

At the same time this development confirms what in my opinion has to be elevated to a principle which should govern all natural language databases and processing programs, and which we can call the Principle of Improvement through Monitored Use. It states that, "as natural languages constantly undergo changes, databases and programs must be considered to be dynamic, requiring constant adaptation to changing usage." It is therefore the users, and this includes translators, collectively who determine the input, content and output of the natural language database and of the natural language processing systems which are to be used as communication aids in multilingual situations.

The present conference can and should be examined from this point of view. We have seen that Systran demonstrates this principle on two levels, i.e. distributed design and distributed use, but does not, not yet at least, specifically and as a matter of policy, apply this principle in its dictionary compilation task.

The affirmation of this principle by various speakers is the first major result of the conference. As tools, machine translation systems must adapt to user demand; as tools to be used on a changing linguistic substance, systems must be continuously monitored for their accurate reflection of current usage.

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The second major topic of the conference was concerned with the problems associated with fitting machine translation systems into the new situation created by the paperless office and paperless data transmission.

One could say that Systran's arrival on the scene precipitated the need to introduce new technology into the offices of the Commission. Part of the difficulties experienced with the wider use of Systran in the Commission is due to the deficiencies and incompatibilities in the data capture, processing and transmission equipment currently available. The other part is due to the absence of a clear policy with regard to such equipment until quite recently.

One can equally remark, of course, that the current flexibility and diversity of Systran applications is due to the fact that it was not from the beginning tied to particular specialised data capturing and processing devices; but this is marginal to our topic.

The text input problem is largely a technical one and will resolve itself as more and more documents become available in machine-readable form. In the meantime optical character recognition methods are themselves improving. This kind of input will remain a useful alternative for incompatible discs and tapes.

At the other end we have the problem of wordprocessing technology which is very diverse; wordprocessing systems are only rarely designed for multilingual communication, and they are chosen for many reasons which do not include the need for editing translations. Wordprocessing is now being recognized as an integral feature of machine translation systems and Systran has found several solutions in several of its versions to the questions of a seamless move from output into wordprocessing systems.

The post-editor and revisors who work with pencil and paper rather than the wordprocessor are still the major obstacle to paperless translation. The slowness of this human intervention can destroy all the advantages of rapid translation offered by the use of machines. This human aspect of wordprocessing in an environment of translation can be tackled from various points of view. On the one hand it is a generation problem. Younger translators who regularly use the wordprocessor for all their work will also use it for post-editing machine translation output. On the other it is a question of availability of machines. If a translator's workstation consists of a wordprocessor linked into a network of document reception and transmission etc., the ordering and processing of machine translated texts will become a more natural occurrence.

Further out on the periphery there are problems of harmonization of document transmission and storage and finally document retrieval, which in the case of translations offer particular complications.

All these issues are of considerable interest and only confirm our view that translation is simply a special case of information and documentation studies. Automation provides the stimulus of integrating translation into a general communication theory and only in this wider environment can we fully benefit from work done elsewhere and connect machine translation into the mainstream of the information market.

There is a clear need for greater compatibility and certain standards but the real problem already exists in monolingual environments; in a multilingual situation which uses translation it is only highlighted. The particular problems of machine translation will be solved together with the broader solutions that have to be found in adjusting to new technology. The case of the European Communities in which multilingual needs dictate monolingual processes is highly exceptional, if not unique in the world.

The last major topic of the papers and presentations was the diversity of Systran itself. This system is used more widely and by a greater range of users for a larger diversity of purposes than any other system currently in use. There is its oldest use for information scanning from raw or minimally edited output, widely used by the US Air Force and now also in Europe. There is the use of post-edited output in the Commission, Canada and now in wider circles through the service bureaux. There are variants of this mode in the rapid post-editing in Luxembourg and the partial editing practised in Dayton.

Then there is the use of Systran for translation of pre-edited texts, as practised by Xerox which leads some people to fear for the quality of our language. I cannot find that the manuals produced for this firm's products would have alarmed George Orwell.

Beside this diversification there is the wide coverage of languages in which Systran operates. The addition of non-European languages is a challenge for development teams especially if they want to use existing analysis and synthesis programs of European languages. We have heard of the special requirements of Japanese and Arabic.

Systran is also diversifying in the nature of texts it processes. It will now have to translate the usual highly specialised texts it was designed for, the broader range of texts needed by Luxembourg and the service bureaux and also the very general texts requested by the users of Minitel. Problems of specialised dictionaries and semantic coding have been mentioned and figured largely in questions.

In addition we have heard that Systran is to be implemented on microcomputers whereas until now it required considerable capacity of mainframe machines.

Other systems are designed for a single one of these functions and/or for a single language pair; in Systran we have an older system which copes with all these demands at once. There is clearly a very robust and simple basic design at the root of Systran which permits this considerable diversity. Different users have introduced variations to make the system perform more satisfactorily for their purposes, thus moving away from the basic design.

The theme of the conference is the re-unification of Systran, and it has been stated that there still is a remarkable unity among the various versions of the system to make such a unification feasible. There is no doubt that an exchange of information and joint development can lead to a considerable reduction of cost and may even advance the improvement of the system in general and its various versions in particular. Especially in the dictionary field is the desire for unification strong because the rewards are so high.

At the same time it must be considered that unification may lead to decline in the quality of output of one type of use as against other types of uses. It is in fact already worth an enquiry at least, whether the improvements introduced for better post-editing are equally beneficial to the direct use of raw translation and vice-versa.

While unity in itself is highly desirable, it has a price and this should not and cannot exceed the possible advantages that may be achieved through separate development of language pairs, type of use, or specific subject matter.

Progress will undoubtedly be achieved by modularisation of the processes involved which then permits the introduction of separate optional programs or dictionaries for specific purposes.

At the moment I still consider quality more important than considerations of development cost.

The workshops will show how much genuine progress can be made in unification of software, procedures, development and software.

The greatest merit of machine translation is that it has spear-headed the industrial revolution in translation, which until recently was entirely based on individual human production. Translation was "hand-crafted" with all that this entails in quality, quantity and cost and slowness of production.

Optical character recognition and other data capturing devices, rapid and cheap printing, are all peripheral to translation itself and are used independently of machine translation to speed up the process and to reduce costs. Combined with various levels of dictionary look-up, interactive or pre-translation, they become integral constituents of a translator's workstation.

Machine translation offers for the first time an alternative to purely human manufacture and thereby a choice to the customer, varying from the cheap and nasty of the dime store to the Tiffany or Cartier of translation. As we are talking about a transformation process the cost of this work should stand in some relation to the value of the original product and future use of the transformed product. This was not possible with a purely human service. There was always a basic cost and as the quality could not be consistently controlled, the results could not be related.

Now we can produce translations by diverse means in greater quantity, at greater speed, as well as at lower cost, so that the customer has a genuine choice. Customer education in the use of the new product and the choices of products and methods available, let alone the training of machine operators are major problems in a constantly evolving industry and market.