Eurotra: The D

A blue ribbon panel is about to evaluate Eurotra, one of the largest machine translation projects in the world. Born of political need, organized according to political exigencies, can it survive only if it's judged by political criteria?

On the 13th of February 1978, the European Community (EC) called a meeting to discuss the consequences of a fundamental Community policy. That policy was called multilingualism, the unqualified right of member politicians and bureaucrats to speak and read their native languages in all community discussions and deliberations. The consequences of that policy were, not surprisingly, the European Paper Mountain and stupendously mammoth translation and interpretation bills.

Representatives of thirty interested European institutions attended. They considered the machine translation system currently in use, Systran, and found it wanting. Based on 1950's technology, Systran had obvious limitations to further development, and besides, it was American. The gathering came to the conclusion that technological dependence was undesirable and that development of a new, wholly European machine translator was feasible. They formed a working group to draw up a proposal.

Four years later – on another 13th, 13 November 1982, a Friday – that proposal found its way into an official Council decision. And thus Eurotra was born, the largest machine translation development program ever undertaken.

Now, five years, and 35 million ECUs (US$ 40 million) later, the project is over-budget and behind schedule. A blue ribbon evaluation committee has been formed to find out what Eurotra has, and hasn't, accomplished. For Language Technology readers, a preview of what it will discover.

Leave the antiseptic sterility of the airport and ride in the silent gray cocoon of a new Ford Scorpio taxi, down the emptiness of a forested highway. Signs of human habitation are scare, you could

be tra– velling across an– other planet. This is Luxem– bourg? Then in the middle of nowhere sprawls a clutter of buildings, all smoked glass and the bronzed anodized aluminum they use on McDonalds. Office locations have numbers in the thousands. Constantly churning escalators carry swarms of scuttling Eurocrats between floors. The building whooshes and clatters like a mechanical hive. Welcome to the European Commission, headquarters of Eurotra. Surrender your passports all ye who enter here.

The first thing the evaluators will discover is that Eurotra does indeed fulfill a real need.

"As a direct result of multilingualism," Sergei Perschke, head of Eurotra, replies with the wary expression and wry smile of a good-natured goalie confronting still another penalty kick, "the EC now runs the largest interpretation and translation service in the world. Even larger than the UN – because the UN only has a limited number of official languages.

"There are nine official EC languages, which makes for 72 language pairs. The translation burden has become so heavy that far from providing full service, certain sectors are only translating five percent of what's required. The internal market, for example. A very important sector – you might say the raison d'etre of the EC itself."

Sergei Perschke shakes his head, then continues in his precise, Russian-accented English. "Politicians don't realize what their decisions entail. Take, for example, the recent Council regulations on chemical products following the recent Swiss pollution of the Rhine. 167 names of chemical compounds were affected. They're still struggling to trans-

late them. So,of course, publication in the official journal is being delayed – and, of course, enforcement.

"Obviously, one cannot hope to fill all the gaps. The needs are growing exponentially. One third of the operating costs of the commission – buildings, heating, salaries – is due to multilingualism. That's almost three quarters of a billion ECUs (US$ 850 million).

"You cannot keep increasing translation services indefinitely. Even if you could find the money, the highly qualified people are hard to find. And even if they could be found, it's ultimately a question of proportion. Translation demand could be infinite. The entire population of Europe could end up translating."

The next thing the evaluators will discover is that Eurotra is behind schedule.

In setting up Eurotra, the Council decision imposed the mirror image of multilingualism on the project's organization: it mandated that each EC member state establish and partially fund its own research group. To that end, the Council approved a five-and-a-half year, three

phase Eurotra program with EC funding of 15 million ECUs (US$ 17 million). National governments were expected to contribute 11 million ECUs (US$ 12.4 million).

"What we didn't realize until later, sometimes much later," Sergei Perschke says, "was that just because EC member states voted in the European Parliament in Strasbourg for a project, that did not automatically translate into commitment by the national administration back home."

The very nature of the organization, then, insured that delay began to accumulate the day the program began. Thus, while some small and well-organized countries, like Denmark and Ireland, set up Eurotra teams on schedule, most countries took longer. Holland and Italy were the extreme cases. They took almost until the end of 1986 to sign contracts of association, two thirds of the way into the original schedule -- when a small scale, 2000 word prototype was already supposed to be ready.

Portugal has yet to sign. But that's the result of still another political decision—this one unavoidable—which has further delayed the project. In June 1985, Spain and Portugal signed treaties to join the European Community. At one stroke, two more languages were added, sending total language pairs skyrocketing from the previous 42 to 72.

According to the original schedule, by the beginning of this year Eurotra was supposed to have completed phase one (preparation and organization) and phase two (basic and applied linguistic research), and have produced a small, 2,000 word working prototype. Phase three was then supposed to expand the dictionary to 20,000 words and develop the prototype, so that it could be handed over 18 months later in mid-1988, to industry or a new program for further development into a product the EC could begin to use on its Paper Mountain.

But as we have seen, the program is already behind schedule.

"The program is now extended," Sergei Perschke says with an almost fatalistic shrug. "When Portugal and Spain joined, we took the opportunity to catch up on the accumulated delay by asking the Council for another year to reach the objectives of the second phase. So now we have until early 1988 to produce the small working prototype with as many languages and language pairs as are realistically feasible. We'll have full coverage for five languages [D, DK, NL, E, F], and partial for the other four."

They will also discover that the current protopye is slow—very slow

At the beginning of February of this year, Eurotra ran the first test of an early model of its prototype translator for its coordinating committee. This model had small grammars and dictionaries, and was based on the linguistic rules and code which had been written. It included functioning analysis, synthesis, and transfer between French, German and Danish. Depending on which eyewitness is queried, it took the system from twenty minutes to two hours to translate a single, passive sentence. Numbingly slow for a system that's ultimately supposed to crunch hundreds of millions of words a year.

Eurotrans dismiss the slowness of this first test as virtually meaningless.

"It's true the software isn't efficient," admits Charlotte Toubro, of the Danish group. "But at this stage, that's not important. Fast software isn't necessary until the lingusitic software is developed. Otherwise, if changes turned out to be necessary, it would be too expensive to change."

"Redesign of the software," notes Stefan Krauwer, a member of Eurotra's central technical coordinating committee, "is already going on, on the basis of a modified theoretical framework. It's already running quicker. If the first system took two minutes, the new system takes two seconds. Redesign is going to make efficient software."

Not everyone is so sure. "Reprogramming won't make that much difference," one observer close to the project commented. "The design is just inherently slow."

They will also discover that Eurotrans are understandably defensive.

To the question of what will the evaluators discover, Eurotrans inevitably reply circuitously by stating that the project should not be judged on the simple criteria of how far along it is in creating a machine translator.

"Eurotra is not the best possible approach," Sergei Perschke admits, "if your only goal is to get a product."

"The first thing evaluators should understand," comments Stefan Krauwer, "is that we were presented with two almost incompatible goals: one, to build a prototype translation system; and two, to develop machine translation knowhow and an infrastructure of relationships between research groups in the EC. If the Commission only wanted to build a machine translator, the way to do that would have been to rent a building in one location, place 25 to 30 experts in it, and set them to work for five years."

"The evaluation should not be a yes/no on Eurotra, but to learn," states Professor Jacques Durand, head of the University of Essex group. "It was the first project in the European Commission of this size. It was highly complicated to set up. And so many factors are beyond control – political questions. The Greeks still don't have a computer. The French group still isn't fully functioning well – because they were forced to buy French equipment. Bull faxes, for example. It slowed them down for a year."

"Given the whole set up of the program," according to Stefan Krauwer, "it could have hardly gone differently since one of the major problems has been the attitude of national governments. But the slowness or stupidity of national governments shouldn't be allowed to block the project."

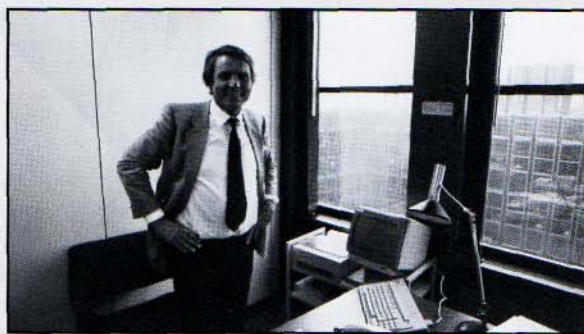## They will discover that there are a few problems.

The political problems have been discussed, and are obvious. Ditto for the organizational ones. They are part and parcel of the project, and can't be changed. However, there are other problems as well.

The disappointing results of the first test points up what some in the program have feared, namely that linguistics has been emphasized over computation. The ratio of linguists to computational specialists on the national teams if often

four and five to one. No artificial intelligence experts are involved, even though it's widely acknowledged, even within the project, that a machine translator of

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the ambition of Eurotra could never work without real world knowledge.

Which raises question about the technological assumptions Eurotra is based on.

"In Eurotra," a researcher stated, "there was no theory as a starting point. We had a project before we had an idea. How could we do that? Because it's very tempting to think that because you have lots of expertise, like with Grenoble and SUSY, you can automatically create a product. That assumption turned out not to be true. In a system of this size, you really need a leading idea, a basis for the project."

For instance, apparently no thought was given when the project was set up to the possibility of using anything but a batch translation system, the way Systran runs. But batch was a technology born in the fifties.

"Perhaps batch was the right decision in the 1970s," another Eurotra researcher commented. "But today I would go for a more modest – and more modern – approach, and allow for more human interaction with the translation process. It's very reasonable to let humans and computers work together – let each do what he's good at. Unfortunately, the idea for interactive only really became popular in the late 1970's, so the issue was never really discussed.

So what you have is a very safe, unexciting technological model. And the bias within Eurotra is against major changes to improve that model. The linguistic and software design is still in a state of flux, deliberately so – the specifications have not been frozen to allow for improvements to be made. However, the national committees, the groups which actually have to write the linguistic rules based on the specifications of the central technical committee, are reluctant to throw away rules written to earlier and perhaps less optimal specifications. They exert a strong pressure for the system to remain the same. By phase three, the system will be even more obsolete than it could have been.

"There's still hope for a rather sophisticated system," Stefan Krauwer of the central technical committee. "But colleague language groups can force us to be more conservative than we want."

Then consider the imperatives of time and the question of obsolescence: the earliest the third stage can create a working prototype with the requisite 20.000 word vocabulary would be 1990, but more likely '91 or '92. Then that prototype would likely be turned over to industry to commercialize into a working product which could actually begin saving the community time and money – a process which should conservatively take another two years.

Which means that the first commercial application will be born obsolete, more than twenty years after the first technical assumptions were made. And it will face competitors, also currently in development, like BSO's Distributed Language Translation (DLT) project, which is based on use of the latest technology, including Artificial Intelligence, interactivity and parallel processors.

Lastly, and perhaps most disturbingly,

Eurotrans defend Eurotra.

"One characteristic of university life in Europe is that people are locally oriented," explains Stefan Krauwer, a member of Eurotra's central technical coordinating committee, in his office at the University of Utrecht. "That has practical consequences. Students don't switch Universities because they will lose scholarships, they will not be taken seriously – or they can get drafted. Working with others in foreign universities is not encouraged. Applications for funding to attend conferences have to made a couple of years in

advance. Only a very small amount of money is available for travel. People just don't have international connections in Europe. Eurotra was a very good way to encourage relationships. In this regard, Eurotra has been a unqualified success."

"It's gotten people to actually collaborate," says Jacques Durand of the University of Essex group. "It's quite new in European universities to get people to communicate electronically. A great achievement."

Another benefit has been to encourage a sort of inter-European technology transfer. Now people are more

aware of what it is everybody's doing.

"One aim of the project is to support computational linguistics in Europe," Dr. Jacques Durand, of the University of Essex states, "to create a center in each country."

Charlotte Toubro: "I know that for the Danish group Eurotra has accomplished a lot. We started out here with absolutely no forum for machine translation. Very few people even knew about it. Now we have a whole group with experience working with MT. Even if the Eurotra project stops, MT will continue here in Denmark."

the final Eurotra design might not be able to accomplish the project's original mandate to cut back on the European Paper Mountain – because it will not be able to handle the ambiguity of bureaucratese. According to Lee Humphries of the British language team at the University of Essex, "Since bureaucratese uses every construction in the book, to achieve reliable translations, reasonable restraints would have to be imposed on input text. If a human can't understand it, a computer surely won't."

"That's a shocking admission," a close observer of Eurotra gasped on hearing the news – then smiled wryly. "Of course, it might not be altogether a bad thing, forcing bureaucrats to write clearly."

What will the evaluators report?

The European Community has a genuine need for multilingual tools. In order to create a unified economic space, fragmentation by language has to be overcome. Plus European industrial competitiveness is at stake – high technology products require lots of documentation. The more complex they are, the greater the importance of documentation.

Is Eurotra likely to provide those tools?

"If the evaluators look at the actual product," Stefan Krauwer says, "and compare it to what it costs, then they might very well say, stop, it's a waste of money. If they compare the organization to a car factory, then they'll say it's a failure. But if they look at other things achieved, then they should say the project was very successful. What's been spent on Eurotra won't pay the daily coffee bills for the translators working in the Community today. If the money has been found to have only gone to building up knowledge in this field, it's been money well spent."

What does Sergei Perschke think the report will be like?

"I hope it will be critical," he answers with his wary gaze and wry smile, "but not unfriendly."

"I think they're pretty naive," a close observer of Eurotra remarked. "If the evaluation committee focuses on the very real translation needs of the community, then they're in trouble. The consequences of a negative report could be major. If the report decides that Eurotra will not be able to produce a product, national groups might walk out."

In the last analysis, however, so much has been invested in Eurotra that about the only way they could vote to kill it is if the evaluators are confronted by something incontrovertibly disastrous – then

they'll have to say no to save their own reputation. More likely, they will opt for another political expedient: either allow Eurotra to go forward at reduced

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funding, or continue funding and recommend a study begin to find a new solution.

And if Eurotra goes? Would that be nine years thrown away?

"At least now when we sit down to design a system," a Eurotran researcher ruefully grins, "we will know what directions not to go in."

P.S. How has multilingualism fared inside Eurotra itself?

Finally, an ironic sidelight to the whole question of multilingualism. When the project was in its formative stages, even though English was the only language all members understood, the working languages were French, English and German.

Then one day the Danes came in and said, "If English is not accepted as the working language of the project, we are going to begin using Danish for all our communication with other members." That was the last time anybody used anything but English.≪