

Has the Human Translator a Future?

by Barbara Snell

(Transcript of a talk given on the 23rd of November 1979)

My first reaction on being asked to speak to the British Computer Society was, "I don't know anything about computers." But on looking more closely at the letter head I saw that it was the Natural Language Translation Specialist Group of the British Computer Society who had written to me. I take it that this implies that you are interested in using computers to translate texts written by and for people who are not computer specialists. If this is not so, please stop me now and I shall have to rethink what I had planned to say.

I see a number of familiar faces amongst the audience, and while I am always delighted to see translator colleagues I must point out that I regard you not as my audience but as spectators. I shall henceforth refer to translators in the third person, as much, if not all, of what I say will be known to you. You may find my examples poor or obvious but please bear in mind that they have been chosen for non-translators.

To return to your secretary's request that I should address you: I was not at first convinced that I would have anything to say that could be of value or interest to BCS members. Due to my involvement a year ago with the seminar "Translating and the Computer", the impression has arisen that I am a protagonist of computer translation. That this is not so will be clear to anyone who has read my introduction to the Proceedings of the Seminar - no commercial intended! However, when I was told that you had never been addressed by a translator, despite your avowed interest in programming computers to take over their job, it seemed that perhaps after all, I might have something to say to you. I am therefore here this evening as a representative of the human race who feels that we should be very careful before supplanting men by machines. For whose benefit are we acting? Whose best interests are we serving?

Having agreed to address you I was asked for the title of my talk. This presented a problem in July as I had very little idea of what I should want to say in November. Which should come first, the talk or the title? I would prefer to give a talk first and decide at the end what I thought it should be called, but this method does not help your secretary to publicise meetings.

It occurred to me that perhaps this is a typical translator's approach. I usually like to leave translation of a title until the end of the job, as so often the meaning of the title is not clear in itself, it rather reflects what is in the passage. In other words, the title may indicate what the piece is about, not what it says, which is not always the same thing. Similarly when writing an article I think it is more common to get through to the end and then come back, breaking it down into sections and providing the headings. It may well be that a heading which has been added after the passage was written is one of those that should also be translated after the passage has been translated. It would be interesting to look into this.

But let us look at Figure 1 which is a list of titles and their translations. No. 1 is very straightforward. I chose it as an example of a title which would probably be translated in the same way by a dozen translators. A possible variation of "solutions based on sulphamic acid" is "sulphamic acid based solutions" which is neater but then what do you do when you want to add "and its salts"? In the text I used both, which might possibly confuse a computer but should be clear to a human reader.

Nos. 2 to 5 are sub-headings from an article. These terms may be familiar to you. I have selected them as showing where I have changed the original meaning rather than just translating it. In 2 I have avoided translating "technologies" by "technology" (the plural would be peculiar in English) as the text indicated that "methods of working" was involved.

In 3 I felt that the insertion of "fault" helped to indicate what the passage was about.

4 is an example of jargon translation: a general dictionary, as opposed to a specialised computer dictionary, would indicate that the meaning was "Research and Cutting Buckles"! When directing a computer to translate you can give it the specialised meanings but it does not always know when to use them if subject areas overlap.

In 5 I added "Microprograms" to clarify the heading. "Outils" nearly always translates as "tools" but not in computer jargon. We shall return to "mise au point" later.

"Defendez vous" in 6 is literally "defend yourself" but as this is a trade union leaflet we must look for a translation which will provide a fairly vigorous image. As for "presse citron", "lemon squeezer" policies would not convey a recognisable standard image to English readers while to the French there is an additional flavour of racking one's brains. This might be brought in later so our version using "the rack" may help bridge a translation/culture mismatch. This reminds me of the poor United Nations interpreter who had a Russian proverb (if I remember aright) about a "cat in a bag". He correctly rendered it in English as a "pig in a poke" which is the equivalent and fitted very well but when the speaker started alluding to feline characteristics the poor interpreter was left with his pig which was totally inappropriate as a metaphor!

The titles under 7 come from a recent Translators' Guild Workshop when members translated an article from the New Scientist into a number of foreign languages. As you see they produced a variety of suggestions, only two of which were identical. I have put them back into fairly literal English to give some idea of how they felt the title should be translated. It is interesting that without exception when the "tale" part of the title was translated a word more closely related to "story" has been used. One might have expected this from the English except that it concerned rats which may have influenced the author in his choice of title. The translators would probably have used words like "Erzählung", "racconto" or "cuento" if they had felt "tale" was the right word for the title of the piece.

You remember that I warned you we should return to "mis au point". The next slide (not reproduced here- Ed.) is a page from Harraps two volume, New Standard French-English Dictionary. As you see, the French word "point" fills the full three columns of an entire page with its enormous diversity of idiomatic meanings. The section for "mettre au point" with which we are concerned, requires a good half column. We have "to focus" for a lens or image; "to perfect" a design, "to tune" an engine; "to position" a machine tool, "to narrow down" a question. Here we have the computer sense: "to check or debug" a programme; "to sub-edit" an article and so on. All this material and a very great deal more will have to be programmed into a computer before it can handle "mettre", let alone "mis" or "mirent au point". This has also had to be programmed into me, but it has been a gradual process over the last forty years. I know that you don't sub-edit an engine or tune an image any more that you focus a question or debug a lens. You might think that this is an extreme example and that with a noun the job will be easier.

Figure 2 shows that even a very simple object such as a screw can have several translations as in 1. You can call a propellor on a boat a screw, but you have to be careful as you might want to refer to other screws and the computer will not easily distinguish between the one that provides the thrust to propel the vessel and the others. We distinguish a bolt by having a nut on the end, in most cases. By the way, the German for this sort of nut is "Mutter" - synonymous with "mother" in English. If you are not careful the computer could end up by having a propellor with a mother on it! And as for "worms" that provides a lot of scope for howlers!

number 2 being an abstract Noun provides more scope for complications. When deciding which English word one will use to translate "Gefahr" you are influenced by the feel of the context. Where there is a likelihood of death I would pick "danger"; when money rather than life is at stake "risk" is preferable; in a general technical text "hazard" is often appropriate; when intellectual rather than physical danger is in the air, "threat", "menace" or "peril" may seem right; "jeopardy" often fits well but one hesitates, because it is not such a commonly used English word and may sound unnatural. The Germans have a good verb "drohen" which equates with "threaten" but the equivalent noun is not much used. Their verb "gefährden" matches our verbs in some cases but to "hazard" has a ring of chanciness about it which puts it in a category with "to risk", while we often have to say "run the risk of losing" to obtain the right equivalent.

In number 3 you see that while a literal translation provides a clear description of what we want, it is much more clumsy than our standard term which is obviously preferable. The difference here between the idea of "safety" and "prevention of danger" is a cultural difference between the English and German outlook.

Number 4 shows how you may find yourself translating the same word or term in a number of different ways in the same text. In a German noise specification I chose "structure-borne sound" as the nearest equivalent term familiar to our acoustic experts; similarly "background noise" is a commonly used expression, although if translated direct into German it would come out as "Hintergrund Lärm", no doubt understandable but not the term they chose. If a computer - or a human being for that matter - translated it not unreasonably as "foreign body sound", apart from sounding rather funny, you would not know if it was a sound emanating from a foreign body, or whether your body sound was coming from another source. In a further section of the specification I had to render it as "vibration measurement" to indicate to the engineers what form of measurement was involved, and finally that was done with what we call a "test meter".

One has to strike a delicate balance between using terms familiar to the reader and trying to retain the concepts of the original. In each case I had to make the decision to change the translation to suit the reader. Could a computer do this? It is however, important to be consistent once you have decided on your terminology, which some people may establish before they start, especially if it is a subject they are at home in. They may read the whole text through and make notes. I learn the hard way and often change my mind as I go along which means re-typing early pages. I keep a glossary notepad and note down whether I have decided to call a spade a spade, a shovel, tool, appliance for moving sand, operational implement or even item of work-related equipment. Not that I would chose to invent such an absurd phrase when a perfectly good word would do, but this is not as ridiculous as it seems: I have come across worse circumlocutions and I'm sure you have too.

This is where ILSAM comes in. For those who are not familiar with this simplified international language system, the acronym stands for International Language for Servicing and Maintenance. I understand however, that your last talk was on this subject so you will not need me to explain that when using ILSAM simplified English, a spade may only be a spade and it can only be one part of speech, so "shovel" could not be both a noun and a verb. This in its turn produces clumsy renderings such as "make a correction" not "correct". This is ideal material for computers to translate but it also becomes child's play for the human.

But who will write like this? How widespread should we encourage this form of expression to become? Should it be taught in schools? Will people be expected to speak in controlled language in a Utopian world? Could or should it ever be imposed? Governments have met a great deal of resistance to foisting innovations on people - look at our metrication! Are we perhaps heading towards this kind of language naturally? No, I think not - quite the reverse. People are more and more inclined to wrap things up in jargon and obscurity to make themselves seem more important. Whoever translates in the future, men or machines, will have to accept that ILSAM is not catching on, but even if it did, it would take 30 years for a new generation of controlled language writers to emerge, so I think we can ignore it for the moment.

Let us look a little more closely at computer translation and the reasons for it. Are people motivated by the aim of providing better translations for the world? Do you go in for computer translation for fun or because it provides a challenge? Or is it because the computer companies pay you for research so that they can extend their markets and sell their hardware and software? These are questions I hope you will answer for me later on. People do translate for fun which is one of the problems of those who do it for money. It is no coincidence that musicians and actors have become

strongly unionised as it can be difficult earning you living as a professional in competition with "have-a-go-for-fun amateurs".

But to return to computers. It is subject that arouses enormous interest at the moment. A recent bibliography of machine translation has 1,200 references, and I doubt if goes back as far as 20 years. If we had a bibliography of translation during that period would it fill a page? I doubt it: people just get on with the job.

What is your vision of the future? The claims of vendors of pocket computer translators say there is now no need to learn a foreign language, we can communicate with foreigners via machines. Perhaps this will prevent misunderstandings and avoid wars. Our track record has not been good so far, maybe this method will be better. But a computer recently caused a red alert in the United States by misreading its signals. I hope you are more confident than I am that computers would be able to undertake diplomatic exchanges successfully if we reached a stage when all communication with foreigners was via machines and it was no longer necessary to learn foreign languages.

Let us look at a few computer efforts at translation. There must be much better howlers around than these, some of which are rather old hat, but people working on computer translation tend to guard their poor results jealously from the public eye, and one can hardly blame them for that!

In Figure 3 in No. 1 we see a very odd rendering of a proper name which the computer did not recognise, but it is not quite clear what it did think it was doing.

No. 2 is an obvious colloquialism which will always be a problem field.

No. 3 has failed to rearrange the word order and had difficulty with the two meanings of "Karte", ticket and map.

Again in No. 4 the translation into French misunderstood the word "like". All homographs need special treatment to instruct the computer how distinguish the appropriate meaning.

To translate these phrases correctly with the pocket computer you need to know the foreign language as you see in No. 5. If the words "At how much hour" are used you produce the correct German version, but if you know that you can probably say it without assistance from the machine.

In 6 the implication is that you are going to hijack the airport or take it by storm while in 7 the homograph "close" was taken for the meaning "nearby" instead of "shut".

Figure 4 was exhibited at the Seminar last November by Frank Knowles in his paper on the "Error Analysis of Systran Output". The top line gives a romanised version of the original with the convention of numbers for certain letters of the cyrillic alphabet. In 1. the verb can mean to roll about laughing or undertake one of many kinds of activities. "Club" and "cloud" are a homograph in Russian in No. 2. The next, No. 3. is a question of adjective usage, while in 4. confusing "customers" and "buyers" is a very forgivable mistake. The connotations of "a large motion" in English are rather unfortunate, quite apart from the fact that it does not translate "traffic"; and so on. These were no doubt selected for their entertainment value and without knowing anything about their frequency in the text one cannot judge how badly the computer did

the job.

I am not suggesting however, that humans are infallible. In fact, in one translation department I worked in we were always threatening to put "errare humanum est" over the door and we wondered whether to add "persons entering do so at their own risk". It would be pointless to pretend that professional, or any other translators always put out impeccable work. Let us look at some human howlers in Figure 5. The first one might be part of a riddle, how many men were there? Those who had never heard of M. Mitterand might well be forgiven for believing there were two. That is not really a translation error, but never mind. The rest down to No. 7 are just a few of the almost too-good-to-be-true collection that people bring back from their holidays. I do not imagine that any of them were perpetrated by professional linguists. Number 8 however is more serious. Someone obviously paid good money to have a brochure printed but the result, while it may amuse English customers, is not likely to inspire confidence in the company. Number 9 is rather different. The words appear to be correct but the sense is elusive. I don't think I would buy a water softener after reading this and yet it may have been done by a professional translator who conscientiously felt he had done a good job. He may even have given it to an English native to check. Perhaps this is computer type translation. Is there anything wrong with it? My criticism is simply that it does not read like attractive promotional literature and does not encourage one to buy. The entire leaflet was on these lines, i.e. written in obscure, highly technical style.

I have referred to the translating profession. Let us take a closer look and see just who translators are.

In the past: Central European expatriates traditionally provided this country with the majority of its translators. They arrived during and between two World Wars, very often as refugees. Educated, usually very cultured, intellectuals with a good command of 2, 3 or more European languages they were often more at home in French than in English, but many had no mother tongue. They were wonderful linguists, splendid people who have given us a lot to live up to in the standard of education and culture expected of a translator but all too often lacking any technical background and worse still, native English. They were prepared to work long hours for peanuts. Translations were expected to be cheap and not necessarily good.

As recently as earlier this month at the Translator's Guild Workshop, I heard someone say "If a client sees a translation in good technical English he is suspicious, he thinks it must have been very easy, people expect translations to be in funny English." Although I have heard that kind of comment often in the past, I never expected to hear it again.

I remember an interview for a job 15 years ago when I was turned down in preference to an applicant with a foreign accent. The personnel manager did not even realise that the language into which the translator would work was English, he just assumed that someone with native English would not know languages as well as a foreigner and he himself was unable to judge!

In the present: Currently in the Translator's Guild there are 3 arts to 1 science graduate, despite the fact that there is a far greater requirement for technical translation and in general, Guild members are not literary translators. Were these students of the arts, unmotivated schoolchildren who took languages because they

texts which will need to be translated from one language to another as long as the peoples of the world continue to retain their own forms of communication.

We even hear claims that machine translation will benefit translators by removing the drudgery of the job and taking over translation of the more boring texts. But most jobs have their routine moments and I am not at all convinced that machine translation can benefit translators in any way.

This does not mean that machines cannot be useful. I am speaking of machines in a wider sense than computers. If you take the basic meaning, you can have an artificial contrivance which could include a means of writing. By this token, translator's tools ranging from the carver of the Rosetta stone's chisel, via the Venerable Bede's quill to our typewriters and dictaphones, are all machines. Interpreters, we know, have different requirements.

Let us move on, therefore, to consider machine aided translation. How can we be helped by modern equipment to translate better, faster and more productively? This could prove more cost effective in both the long and the short term than spending money on computer translation research and it would certainly be more beneficial to the profession and those in it.

Statistically we spend a great deal of time searching. You look for a term in one dictionary, then several. If you find it you are probably not happy until you have confirmation from another source of reference. but suppose it isn't there. Why not? It may be a new word, a foreign word (i.e. neither source nor target language), a coinage thought up by an individual or a company, a typing error and so on. The original message was not intended for the translator, although the knowledge that it was written by one human being for the benefit of one or more others is always a help in reassuring the translator that obscure though it may seem, a message must be there somewhere. We are the intermediaries with the responsibility of finding an answer. You still have not found your term; perhaps you remember using it before and you look back through files; you phone colleagues; read up reference books or visit public libraries. If all this knowledge were in a data bank which you could key into and the results came up on a VDU at your elbow, you not only would have it all, including up-to-date terminology, at a moment's notice but you would know that other translators would refer to the same reference and this would help to standardize terms and resolve ambiguities. Your data bank would be a synthesis of all dictionaries, glossaries and word lists and an authoritative source of reference. Naturally the terms would be vetted by terminologists but they could be included on a provisional basis with appropriate notes before they were accepted as standard.

If we all used word processors with VDUs to type and edit our work we would be able to revise our translations and get further away from the original, thus improving our work and removing the clumsy turns of phrase which tend to occur when we work under pressure, but without having to rewrite the whole job.

Figure 6 shows four versions of part of a list of contents of a radio interference specification: The original German, a first translation, a version provided by a translator in the United States and a final version, from which you will see that I made some fairly radical changes which also had to be carried out throughout the text. I decided that "Radio" was redundant as we just speak of "interference suppression"; "Radio Interference Limits" seemed neater than my first attempt, and so on. I hope you feel that my second thoughts were an improvement on the first as it involved

retyping the 70 odd page specification!

In Figure 7 you see two versions, once again a first effort and a rewrite. It is not necessary to rehash everything as drastically as this, and when revision entails either a lot of Snopake or retyping you have to stop and ask whether it is cost effective to go for better quality. When deciding priorities it is usually the style that suffers because it is time-consuming and expensive to get right away from the original to make the translation sound like a piece of native English.

Consistency of terminology is very important and methods of keeping personal glossaries are often talking points among translators. I look to the day when a pocket computer with blank cartridges to build up one's own data bank, will be cheap and practicable.

We must get away from the idea that translation is a routine substitution of one set of words for another. We should think of our job as being to edit and improve the texts we work on. Where meanings are not clear it is not good enough to make a note or comment that the original was poor. Maybe it was, but that is all the more of a challenge to improve it. This will take time and effort, we will not do it for nothing but by making such a service part of the job we will be doing something that a computer cannot cope with.

If we refer again to Figure 1 nos.2 to 6 we saw the editing process in operation. Intelligent translators - and surely they should all be - ought to take an intelligent interest in the texts, spotting errors and ambiguities as they go along. E.g. they should know from the context of a speech by Margaret Thatcher on Rhodesia when she says "other interested parties" if she means the Patriotic Front, or not.

To conclude, I would like you to imagine a computer translation competition say, on Venus. There would be row of mysterious boxes and cabinets producing wonderful, almost intelligible translations which only required a little imagination to sort out the meaning with a bit of good editing. Little green men would be comparing the output and computing the costs of manufacturing, programming, installing and running the machines. But in a corner there is one cabinet which is not connected to any apparent source of energy, it just has a door and air-holes. To everyone's amazement it outputs 100% intelligible translations. Its fuel for one work shift is a plate of fish and chips and a glass of beer. You will have guessed its secret already but the Venusians find it hard to understand, especially when they are told that the system does not have a production cost. However, an argument starts as to whether the cost of producing a human translator (for that is what the cabinet contains) should include raw materials, housing, cladding, energy, transport, etc., etc. The promoters of the computer systems insist that all the man's requirements from the cradle to the grave should be included, but the promoter of the human translator argues that these costs are irrelevant because the human being is there already. We do exist, you do not have to invent us. There are more of us where we came from. We are capable of improvement and development. There must be many jobs which are far more unpleasant than translation to perform. I suggest that computers should be directed at eliminating other less rewarding tasks than translation.

If you are interested in providing the world with as many good translations as possible, concentrate your efforts on providing aids for translators and do not waste your time on machine translation.

I have said enough except maybe to revise the title of my talk now that I have given it. Perhaps "Has Computer Translation a Future?" would be more appropriate!

Fig. 1.

1. ((L'ELECTRODEPOSITIONE DEI METALLI DA SOLUZIONI A BASE DI ACIDO SOLFAMMICO E SUOI SALI
((ELECTRODEPOSITION OF METALS FROM SOLUTIONS BASED ON SULPHAMIC ACID AND ITS SALTS (SULPHAMIC ACID BASED SOLUTIONS)
2. ((CONCEPTION D'UN LANGAGE INDEPENDANT DES TECHNOLOGIES
((DESIGN OF A LANGUAGE INDEPENDENTLY OF THE METHODS OF WORKING
3. ((SENSIBILISATION DES CHEMINS DE PROPAGATION
((SENSITISATION OF FAULT PROPAGATION PATHS
4. ((RECHERCHE ET COUPURE DE BOUCLES
((RETRIEVAL AND SPLITTING OF LOOPS
5. ((LES OUTILS DE MISE AU POINT
((AIDS FOR DEBUGGING MICROPROGRAMS
6. ((DEFENDEZ VOUS La C.G.T. face à la politique presse-citron (se presser le citron = to rack one's
((STICK UP FOR YOURSELF! In response to current policies of "the rack" the C.G.T. brains)
7. ((A SALTY STORY x 2 (EINE GESALZENE GESCHICHTE) ORIGINAL - A SALTY TALE
((DO YOU TAKE SALT? (NEHMEN SIE SALZ?)
((A SALTY BUSINESS (EINE SALZIGE SACHE) (N.B. Whole text needed before decision on the title)
((A STORY TO BE TAKEN WITH A PINCH OF SALT (UNE HISTORIA PARA TOMARSELA CON UN POCO DE SAL.)
((A STORY WITH PLENTY SALT (UNE HISTORIE QUI NE MANQUE PAS DE SEL.)
((A SPICY/SALACIOUS STORY (UNA STORIA SALACE)

Fig. 2.

1. SCHRAUBE = SCREW, BOLT, WORM, PROPELLER

2. GEFAHR = DANGER (Electrical dictionary)
= RISK Insurance "
= HAZARD General technical
= THREAT, MENACE, PERIL political
= JEOPARDY general dictionary
GEFÄHRDEN = TO ENDANGER, IMPERIL, JEOPARDISE

3. GEFÄHRENSCHUTZVORSCHRIFTEN (literally) DANGER PROTECTION REGULATIONS
(translate) SAFETY REGULATIONS

4. KÖRPERSCHALL = STRUCTURE-BORNE SOUND (literally BODY SOUND)
FREMKÖRPERSCHALL = BACKGROUND NOISE (literally STRANGE/FOREIGN BODY SOUND)
KÖRPERSCHALLMESSUNG = VIBRATION MEASUREMENT
MESSGERÄT = TEST METER (literally MEASURING APPLIANCE)

Fig. 3.

1. The name DR. J. VAN HOOF translated as "LE SABOT DE DR. J. VAN
LE CAMION ANGLAIS"
2. "Sie sehen gut aus" YOU'RE LOOKING WELL translated as "SHE SEE GOOD OUT"
3. Zeigen Sie mich der Weg auf der Karte "SHOW YOU ME THE WAY ON THE TICKET"
4. Ou pouvoir je trouver un chapeau aimer cela "WHERE CAN I FIND A HAT TO
LOVE THAT?"
"Where can I find a hat like that?"
5. Was Zeit ist Abendessen? for "What time is dinner" AT HOW MUCH HOUR
6. Como fare io prenderera a il aeroporto? "How do I get to the airport"
7. Que tiempo Vd cerca? QUE HORA CIERRA? What time do you close?

Fig 4

1. Vcera my qelyl cas katalis6 na lodke.
Yesterday we the entire hour rolled themselves on a boat.
Yesterday we went out boating for a whole hour.
2. Rabocie, stro45ie gidro3lektrostanqih, selcas otdyxaht v klube.
Workers, that construct a hydroelectric power plant, rest now in a club.
The workers who are building the hydroelectric power station are now relaxing in the club.
3. K zavtraku nam podali 4lqa vsm4tku i kofe po-turecki.
To breakfast to us they fed an egg soft-boiled and a coffee in Turkish.
For breakfast they gave us soft-boiled eggs and Turkish coffee.
4. V univermag nepreryvno vxod4t pokupateli.
In a department store continuously enter buyers.
Customers are constantly entering the department store.
5. Na uliqe bol6woe dvijenie.
On a street large motion.
There is a lot of traffic in the street.
6. Ona navarila 5el na neskol5ko dnei.
It welded on cabbage soups on several days.
She cooked enough cabbage soup for several days.
7. On uxajivaet za nel.
It handles it.
He is courting her.
8. On razvels4 s jenoi.
It was bred with a wife.
He has divorced his wife.
9. Spasibo, bol6we ne xocu.
I no longer want thanks.
No more for me, thank you.

Fig. 5.

1. From "The Times" M. FRANCOIS MITTER AND THE SOCIALIST LEADER"
2. SPECIALIST IN WOMEN AND OTHER DISEASES (Italian doctor's sign)
3. (Notice in Istanbul) TEETH EXTRACTED BY LATEST METHODISTS
4. (Romanian hotel) THE LIFT IS BEING FLXED FOR THE NEXT DAYS. DURING THAT
TIME WE REGRET THAT YOU WILL BE UNBEARABLE
5. (Torremolinos café) "OUR WATER IS SAFE FOR DRINKING. IT HAS BEEN PASSED
PERSONALLY BY THE MANAGEMENT"
6. (Bulgarian hotel) "IF YOU ARE SATISFACTORY TELL YOUR FRIENDS. IF YOU ARE
UNSATISFACTORY, TELL THE WAITRESS"
7. Travel brochure advertising an island "FOUNDED BY THE VICE-KINGS OF AMERICA"
8. A car hire firm's leaflet:
To avoid any break down, which are always unpleasant holiday remembers, the
car at your disposal has been totally revised before However, if you should need
a mechanician, please apply at one of the bellow mentioned Garages With pleasure
they will recover any camages on cars of our entreprise, totally free of charges.
9. Description of a water softener:
EXCHANGE BED - Specific ion exchange resins of high capacity and mechanical
resistance in the salt cycle supported by an underbed formed by three layers of
minerals with decreasing granular size.
GUARANTEED TREATMENT - By ion exchange in the salt cycle over a bed of proven
resin of high mechanical resistance.

ORIGINAL

Bestimmungen für die Funk-Entstörung
Grenzwerte für die Funkstörungen
Durchführen der Messungen und Beurteilen der Messergebnisse
Anwendung der Funkstörgrade
Aufschriften und Hinweise

FIRST ATTEMPT

Specifications for Radio Interference Suppression
Limits for Radio Interference
Carrying out the Tests and Assessing the Results
Application of the Interference Levels
Markings and Instructions

U.S. VERSION

Specifications for radio interference suppression
Limiting values for radio interferences
Performance of the measurements and judgment on the
measuring results
Application of the radio interference degrees
Inscriptions and hints

FINAL VERSION

Specifications for Interference Suppression
Radio Interference Limits
Measuring and Evaluation of Results
Application of Radio Interference Levels
Labels and Instructions

Final version

Suggested Improvement

IT IS CLEARLY NOT POSSIBLE TO PROVIDE A COMPLETE SOLUTION DUE TO THE CONDITIONS OF THE CALL SYSTEM AND THE INTERFACE NECESSARY WITH THE BRANCH STOCK CONTROL SYSTEM, WHICH CANNOT BE ELIMINATED. THE CALL SYSTEM THEREFORE HAS HYBRID FEATURES COMBINING MAXIMUM COMPUTERIZATION OF THE PROBLEM TOGETHER WITH MANUAL OPERATION.

DUE TO THE CONDITIONS IMPOSED BY THE CALL SYSTEM AND NECESSITY FOR INTERFACE WITH THE BRANCH CONTROL SYSTEM IT IS CLEARLY IMPOSSIBLE TO PROVIDE AN IDEAL SOLUTION. THE CALL SYSTEM THEREFORE CONTAINS HYBRID FEATURES COMBINING MAXIMUM COMPUTERIZATION OF THE PROBLEM AREAS TOGETHER WITH MANUAL OPERATION.

Spanish original

Por supuesto, no es posible dar una solución total debido a los condicionantes del sistema Call y a la interfase necesaria con el sistema ECA's cuya función no puede suprimirse. De aquí que la solución Call es algo híbrido que automatiza al máximo el problema, coexistiendo parte de la labor manual.

THE INTERFERENCE VOLTAGE NEED NOT BE MEASURED IN THE CASE OF APPLIANCES OPERATED BY THEIR OWN BATTERIES IF MAINS LEADS CANNOT BE ATTACHED TO THEM.

IN THE CASE OF APPLIANCES OPERATED BY BUILT-IN BATTERIES TO WHICH LEADS CANNOT BE ATTACHED, IT IS NOT NECESSARY TO MEASURE THE INTERFERENCE VOLTAGE.

IN MANY APPLIANCES THE LEAKAGE CURRENT HAS A HIGH DISTORTION FACTOR ESPECIALLY ITS CAPACITIVE COMPONENT, WHICH CAN MAKE IT MANY TIMES GREATER THAN THE VALUES CALCULATED FROM THE VOLTAGE, CAPACITANCE AND MAINS FREQUENCY.

IN MANY APPLIANCES THE LEAKAGE CURRENT AND ESPECIALLY CAPACITIVE COMPONENT HAS A HIGH HARMONIC CONTENT. IT THEREFORE BE MANY TIMES GREATER THAN THE VALUES CALCULATED FROM THE VOLTAGE, CAPACITANCE AND MAINS FREQUENCY.

German original

Bei Geräten, die aus eingebauten Batterien betrieben werden und an die keine Leitungen angeschlossen werden können, entfällt die Messung der Störspannung.

Bei vielen Betriebsmitteln hat der Ableitstrom, insbesondere ein kapazitiver Anteil, einen hohen Gehalt an Oberschwingungen. Er kann daher um ein vielfaches grösser sein, als der aus Spannung, Kapazität und Netzfrequenz berechnete Wert.