

# PERSONAL IMPRESSIONS OF A MACHINE TRANSLATION SYSTEM

Robert Ordish

Translators from our bureau, chiefly those responsible for translating from German into English, recently went to view the Logos machine translation system at the Logos Company in the Wang building in Frankfurt. Personally, I was not sure what to expect, although on balance probably more than we actually got.

The morning session consisted of an introductory talk by the Logos representative, whose discipline turned out on inquiry to be marketing. With him was an American lady just flown in from Boston but with very good German who had studied *Germanistik* and is now studying computer science in the evening. She provided the linguistic background, as well as her typing skills, for the more detailed afternoon session.

The morning's discussion whetted my appetite for the MT system because, although the representative was not a linguist and clearly not a translator, he came over as very committed and put forward a strong case for

companies needing to computerize to stay competitive. This is, of course, a general point much wider than MT, and does not necessarily mean that MT is the only way forward for translating; it is an offshoot of the new information processing technology, which in itself is interesting for translators.

We also touched upon the danger of redundancy for typists following the introduction of such systems. This will definitely become an issue soon and, generally, I wonder if West German industry will be able to cope with absorbing the new technology without generating British levels of unemployment — though I am far from suggesting this is the only reason for the mass unemployment in the UK.

After a very good lunch we got down to brass tacks with the Logos MT system itself. Upon request, we had brought along some texts, and these were keyed in by the lady. It was stressed that this laborious and time-consuming task would not normally be done by translators themselves; a prerequisite for Wang, which is on-line, is for the original text to be stored in compatible Wang hardware (at any location), and so recall presents no problem. Since Logos uses Wang hard-

ware, it can offer all the usual communication possibilities this brings.

Altogether, four separate texts were entered, and in each case we waited between 15 and 20 minutes for the translation. We were told that the system could cope with more than one translation concurrently. An already existing vocabulary of 100,000 words was claimed, and texts are scrutinized before input for terms not yet in this vocabulary and entered beforehand. Proper nouns must be placed in inverted commas, or the machine will try to translate them (this had an amusing sequel). If texts contain many "new" words, this initial preparation can be fairly time-consuming.

The four texts shown below, along with pre-given unknown words, were tried on Logos during our visit. In each case the German original plus list of unknowns, the machine's raw translation and the final version following on-screen editing by the translators present are provided. I shall make several observations but, since readers can see the results for themselves, there is no need for a detailed commentary.

With regard to the list of new words at the foot of Specimen Text 1, *firmernintern* and *Unternehmens* are typing errors and so unrecognizable to the system even if already in its vocabulary. The attempt to translate *Barcelona* arose from the failure to enter the word in inverted commas. Where there are several possible translations for a term, Logos has been programmed to select from a list of priorities: perhaps there really is a "Bar Celona" somewhere off the Ramblas, but that "destitute" should appear as a synonym for *bar* in this context surprised us — was the priority list programmed in by a Yorkshireman without his hat? It became similarly confused over the name *Torremolinos*. Incidentally, such examples draw attention to the need to keep typing activity down to a minimum, since it is a source of errors.

Elsewhere, there were problems in the division of compound nouns, a serious matter, of course, in German. False division of *Phaseneinteilung* produces a nonsense translation, and the same problem leads to a failure to recognize common words such as *Beschaffung* and *Entwicklung*. On the other hand, it correctly diagnoses the role of the medial *s* in *Forschungssubstanzen*.

Despite these points, and the creative translation of *Barcelona*, I was fairly impressed by this first translation. It certainly produces a realistic basis for rapid editing, which is the object of the exercise. The reason for this success is that the text is relatively

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"dry" and factual and throws up relatively few translation problems as such.

The attempts at translating the second text were less impressive. Such uncertainties as the translation of *Schicht* by "layer" given the context, the placing of "equipment" in the plural and the virtually literal translation of *Arbeitskräfte* by "work-power" serve to highlight the system's limitations. It is also unable to decide on a translation for the personal pronoun *ih(r)e* and, exceptionally, offers more than one possibility in the body of the text: "its/their/you". At some points, easily recognizable, the offering is garbled or disjointed and still greatly in need of polishing.

Specimen translation 3, it must be said, ranges from the poor to the completely unserviceable, although Logos can be excused for producing "thunder-tin can" out of *Donnerbüchse*, which does not come up a lot, and likewise for its "large scale-wild-hunter". *Verbesserung* is of course a typing error, but that the plural form *Unfälle* was unknown surprised everybody, even the demonstrators. The actual translation, though, reveals that the system cannot cope realistically with difficult, literary type texts and it must in fairness be stated that the Logos people are by no means claiming that it can. I think it would be a mistake to write off the system on the strength of this performance; it should, rather more, serve as a yardstick for assessing the system's capabilities.

Similar considerations apply to the raw translation of Specimen Text 4. Another big surprise was that *dankbar* was unknown, and the combination *spanischsprechend(er)* could not be recognized. Regarding the translation itself, the "literary" standard is again clearly too high. The first sentence is poor considering problems dealt with more successfully elsewhere and, for all the logic upon which the system is based, the demonstrators were honest enough to say that sheer luck is often a factor. The programmers have done an impressive job in feeding in lots of tasty German grammar, but imparting the necessary flexibility for translation purposes is a task of a different order of magnitude: a logical system cannot be expected to have a human translator's *feel* for language. Consequently, for all but the driest and most factual of texts, results are so mediocre that editing is scarcely quicker than translating the text oneself in the first place, since problems have been left unsolved. With such texts, then, it is not merely a question of editing the finishing touches and inspired subtleties into a basically sound translation, as the

reader can see.

This brings me to the question of the editing process itself. Readers will have noticed that even our edited versions are wobbly in places, and even contain errors, eg "unconceivable" in Text 4. Admittedly, the exercise was taking place in an artificial situation and there were at least three people offering suggestions, but the visitors are agreed that the main problem of difficulty in concentration was caused by the display itself. What we actually read from, on the day, was a linked-up television screen rather than directly from the Logos display whose quality, we were assured, is much more sparing of the eyes. Again, the questions of eye-strain and difficulties in concentrating are not specific to MT, and I was interested to read in F.C. Corney's article in the Winter issue of *The Incorporated Linguist* that, when using a word processor for translating, he prefers to edit the print-out rather than the display. However, this would considerably slow down turn-around time for Logos, and speed is a major selling point. For instance, in an article last May in the business section of the *Frankfurter Allgemeine Zeitung* reviewing the Logos system and included by Logos in their publicity material, the impressive figure of 20,000 German words translated into English hourly is quoted. The aspect which caught the journalist's imagination and provided the substance of his headline *Nachts — wenn der Übersetzer schläft* is that the system can be in service 24 hours a day. Clearly, at volumes like this and with a need to make the system pay Logos earns a certain rate per line translated editing is going to have to be rapid and efficient. In my opinion, there is a problem in respect of quality of the workplace as well as efficiency, and I am afraid it was given rather short shrift on the day. I see no answer as such, other than not expecting employees to spend more than a certain amount of time at a VDU.

I came away with the feeling that the system is "a good thing" but needs to become much better. Without extensive preparation and then editing afterwards, its product is often very rudimentary. On the other hand, the intelligence is there and it undoubtedly will become better. And perhaps French grammar, being programmed into Logos at the moment with the result to be brought on to the market imminently, will be rather more digestible than German. From the commercial point of view Logos certainly needs this second string to its bow, and Spanish, too, work upon which has apparently not yet started,

would be a valuable third for departments dealing with several languages and wishing to use the system for as much of their work as possible to make it pay its way.

It is true that it is limited with regard to the type of texts it can usefully deal with, and although the results from our texts are not particularly impressive as they stand, nevertheless they should be kept in perspective; for these results are almost certainly not representative of what the system could achieve once programmed with the information required by the customer and used for fairly standard texts which often repeat themselves with the occasional variation. The system is capable of learning, and feedback from early customers, who are involved in what is practically pioneer work, is vital for expanding its capacities. Confidential data, of course, are not written into the standard software.

The extent to which the Logos MT system can learn is something of an unknown factor. Although it can only output what has been input, not having a mind of its own, the day when it can produce a good translation of the average waffly, abstruse speech is not on the horizon. One objective limitation is that it cannot cope with sentences over 60 words long for reasons of the electronics. I put the obvious question, ie, what if you are faced with a sentence which is over 60 words long? I received two pieces of advice which I shall let stand for themselves: (a) adjust the punctuation and (b) prevail upon your authors to use shorter sentences. We all agreed in a philosophical way that authors should improve their style, and the demonstrators thought that this would help obtain the optimum results from Logos. Unfortunately, the fact that many source texts are badly written and often have to be improved by the translator is a basic fact of the market Logos are trying to sell their product in. What this means is that it can do the job if the type of text is right and after a "running in" period whose length will decrease as the system matures. As far as I can judge, it has a future. It can do repetitive work which translators find boring; it cannot do the more demanding work which they find interesting. The creative skills of the human translator are also needed for editing its output. Therefore, any fears of the human translator being replaced as such are groundless, at least in the foreseeable future. For that to happen would require another quantum technological leap.

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Mustertext 1

Anlässlich des 'Medical Directors' Meeting' Iberoamerika in Torremolinos habe ich über die Organisation der medizinischen Präparateentwicklung im Firmenverband gesprochen.

Ich hatte damals gesagt, daß es notwendig war, ein Modell der medizinischen Präparateentwicklung für Forschungssubstanzen - das Modell Barcelona - zu schaffen, das den speziellen Unternehmenszielen Rechnung trug und mit den vorgegebenen Organisationsstrukturen des Unternehmens übereinstimmte. Lassen Sie mich kurz das Wesentlichste rekapitulieren:

Klinische Prüfungen sind ein wesentlicher Teil der Präparatebeschaffung und deshalb eine operative Aufgabe.

Sie werden in Phasen eingeteilt; firmernintern bis zur Einführung eines Produktes in Klinik I/II und III.

Modell Barcelona sieht für die klinischen Prüfungen in den Operativen Einheiten vor:

- a) Bearbeitung nach Projekten unter medizinischer Projektleitung
- b) Prüfungskontinuität über die Phaseneinteilung hinweg
- c) Synchronisierung und Internationalisierung der Prüfungsabläufe
- d) Agieren nach einem Schwerpunkt- und Verbundsystem, 'Medical-Area-System' genannt.

Der Zentrale obliegt die medizinische Koordination der klinischen Prüfungen und jener für die Phasen I und II der ZA Medizinische Forschung, für die Phase III der ZA Medizinische Dienste.

Liste der neuen Wörter

BARCELONA	2
BAR CELONA	
DESTITUTE	
FIRMENVERBAND	1
FIRMEN VERBAND	
FIRM - ASSOCIATION	
FIRMERNINTERN	1
FORSCHUNGSSUBSTANZEN	1
FORSCHUNG SUBSTANZEN	
RESEARCH - SUBSTANCE	
IBEROAMERIKA	1
II	2
III	2
PHASENEINTEILUNG	1
PHASE NEIN TEILUNG	
PHASE - DENIAL - DIVISION	
PRA4PARATEBESCHAFFUNG	1
PRA4PARAT EBESCHAFFUNG	
PREPARATION	
PRA4PARATEENTWICKLUNG	2
PRA4PARAT EENTWICKLUNG	
PREPARATION	
PRU4nFUNGSABLA4UPE	1
PRU4FUNG ABLA4UFE	
CHECK - PROCEDURE	
PRU4FUNGSKONTINUITA4T	1
PRU4FUNG SKONTI UITA4T	
CHECK - DISCOUNT	
RECHUNG	1
TORREMOLINOS	1
TOR REM OLINOS	
GATE - REM	
UNTERNAHMES	1
UNTER AHMES	
LOWER	
VERBUNDSYSTEM	1
VERBUNDS YSTEM	
COMPLEX	
ZA	2

Logos Übersetzung 1

On the occasion of the MEDICAL DIRECTORS MEETING Latin-America in TORREMOLINOS, I have spoken about the organization of the medical product-development in the FIRMENVERBAND.

I then had said that it was necessary to organize a model of the medical product-development for research substances - the model destitute-CELONA -, which bore calculation of the special corporate goals and agreed with the preset organizational structures of the business. Please allow me to recapitulate the most essential briefly:

Clinical checks are an essential part of the obtaining products and an operational task therefore.

They are divided into phases; company-internally up to importation of a product to hospital I/II and III.

Model destitute-CELONA plans for the clinical test in the operational units:

- A) Processing following projects under medical project direction
- B) Trial continuity via the division into phases
- C) Synchronization and internationalization of the trial procedures
- D) Called to action in accordance with an emphasis-and co-ordination system, MEDICAL-AREA-SYSTEM.

The center is responsible the medical coordination of the clinical checks and that research medical for phases I and II of the ZA, for phase III of the ZA medical services.

Redigierte Übersetzung

On the occasion of the MEDICAL DIRECTORS MEETING Latin-America in TORREMOLINOS, I spoke about the organization of medical product development in the FIRMENVERBAND.

Then, I said that it was necessary to organize a model of medical product development of research substances - the BARCELONA model -, which took the special corporate goals and agreed with the preset organizational structures of the business into consideration. Please allow me briefly to recapitulate the most essential:

Clinical trials are an essential part of obtaining products and therefore an operational task.

They are divided into phases; company-internal up to introduction of a product into clinical phases I/II and III.

The BARCELONA Model provides for clinical tests in the operational units:

- A) Processing by projects under medical project direction
- B) Trial continuity beyond phase divisions
- C) Synchronization and internationalization of the trial procedures
- D) Action in accordance with a co-ordinated system, with predetermined points of emphasis, the MEDICAL-AREA-SYSTEM.

The Zentrale is responsible for the medical coordination of the clinical trials and for phases I and II of the ZA Medical Research and for phase III of the ZA Medical Services.

4.4 Zeitgliederungsschema Betriebsmittelzeit

Sondermaßnahmen außerhalb der möglichen Betriebsmittelzeit sind z.B. Mehrarbeit, Überstunden und Schicht.

Mögliche Betriebsmittelzeit ist die Normalarbeitszeit.

Freie Betriebsmittelzeit bedeutet, daß Betriebsmittel bereit stehen, jedoch Aufträge bzw. Personal fehlen.

Tatsächliche Betriebsmittelzeit (Arbeitszeit)  
Arbeitszeit ist im Sinne dieser Richtlinie die Zeitspanne, für die die Arbeitskräfte für ihre Anwesenheit an den Betriebsmitteln bezahlt werden, z.B. Arbeitszeit je Schicht, Tag, Woche.

Nebenzeiten

Allgemeine Nebenzeiten sind bezahlte Betriebspausen, Anlauf- und Auslaufzeiten.

Die Anlaufzeit ist der Zeitraum von der Inbetriebnahme des ersten Aggregates eines Betriebsmittels bis zum Ausstoß des ersten brauchbaren Produktes. Die Auslaufzeit ist der Zeitraum vom Ende der vollen Beaufschlagung des ersten Aggregates eines Betriebsmittels bis zur Außerbetriebnahme des letzten Aggregates eines Betriebsmittels.

Rüstzeit ist der Zeitraum, der notwendig ist, das Betriebsmittel auf entsprechende Format, auf die Füllgutart und -mengen, usw. ein- oder umzustellen. Dies geschieht überwiegend z.B. bei Formatwechsel durch Maschineneinstellung (Rüstzeit I) oder bei Präparate- bzw. Auftragswechsel (Rüstzeit II).

Liste der neuen Wörter

ARBEITSKRA4FTE	1
ARBEIT KRA4FTE	
WORK - POWER	
AUFTRAGSWECHSEL	1
AUFTRAG WECHSEL	
ORDER - CHANGE	
AUSLAUFZEIT	1
AUSLAUF ZEIT	
OUTFLOW - TIME	
AUSLAUFZEITEN	1
AUSLAUF ZEITEN	
OUTFLOW - TIME	
BETRIEBSMITTELZEIT	5
BETRIEBSMITTEL ZEIT	
RESOURCES - TIME	
BETRIEBSPAUSEN	1
BETRIEBS PAUSEN	
OPERATING - PAUSE	
FORMATWECHSEL	1
FORMAT WECHSEL	
FORMAT - CHANGE	
FU4LLGUTART	1
FU4LL GUT ART	
FILLING - GOOD - TYPE	
II	1
MASCHINENEINSTELLUNG	1
MASCHINEN EINSTELLUNG	
MACHINERY - SETTING	
MEHRARBEIT	1
MEHR ARBEIT	
MORE - WORK	
NEBENZEITEN	?
NEBEN ZEITEN	
ADDITIONAL - TIME	
NORMALARBEITSZEIT	1
NORMAL ARBEITSZEIT	
NORMAL - WORKING TIME	
ZEITGLIEDERUNGSSCHEMA	1
ZEITGLIED UNGSSCHEMA	
TIMER	

#### 4.4 Breakdown of equipment time equipment time

Special measures outside the possible equipment time are e.g. extra work, overtimes and layer.

Possible equipment time is the normal-working time.

Free equipment time means that equipment are ready, however missing orders or personnel.

Actual equipment time (working time)

Working time is the length of time for which the employees are paid at the equipment for its/their/your presence, e.g. working time in the sense of this instruction per layer, day, week.

Non-operating times

General non-operating times are paid breaks, start-and shutdown times. The start time is the period of the start-up of the first aggregate of an equipment up to ejection of the first needable product. The shutdown time is the period of the end of the full admission of the first aggregate one of equipment up to the taking out of operation of the last aggregate of an equipment.

Set-up time should be a-or shifted the period which is necessary, the equipment to corresponding format, to the product and amounts, etc.. This occurs predominant e.g. during/upon format-change via machinery-setting (set-up time I) or in the case of product-or change of order (set-up time II).

Redigierte Übersetzung

#### 4.4 Breakdown of equipment time

Special measures beyond the possible equipment time are e.g. extra work, overtime and shift work.

Possible equipment time is the normal working time.

Free equipment time means that equipment is ready, however orders or personnel are unavailable.

Actual equipment time (working time)

In the sense of this guideline, working time is the length of time for which the employees are paid to attend to the equipment, e.g. working time per shift, day, week.

Non-operating times

General non-operating times are paid breaks, start-up and shutdown times. The start-up time is the period from starting the first unit of equipment up to completion of the first useable product. Shutdown time is the period from the end of full operation of the first unit of equipment up to shutdown of the last unit of equipment.

Set-up time is the period necessary for setting or resetting the equipment to the appropriate format, to the product type and quantity, etc. This occurs predominantly during format change by machinery setting e.g. (set-up time I) or in the case of product or order changes (set-up time II).

Mustertext 3

Tiger oder Wespe

In einem Beitrag über Risikovoranschau hat 'Edgar Nill', den wir in unseren Arbeitsschutz-Informationen schon öfter zitiert haben, eine moderne Fabel erfunden. Er warnt uns bei der Entwicklung von Strategien zur Verbesserung der Arbeitssicherheit davor, in die Rolle des Großwildjägers zu geraten, der mit Fernglas und Donnerbüchse nach dem Tiger ausgeht, aber inzwischen am Stich der Wespe stirbt, die auf dem Obst saß, das er - ohne hinzuschauen - auf der Pirsch verspeiste.

Wenn wir die Unfälle des letzten Jahres Revue passieren lassen, dann gibt es schon manche Parallelen zum Großwildjäger. Nicht technische Mängel sind es, die die Masse der Unfälle ausmachen, sondern kritische Phasen im täglichen Betriebsgeschehen, die meistens im voraus nicht erkennbar sind. Deshalb ist jeder aufgerufen, verborgene Risiken durch Vorausdenken aufzuspüren. Man wird dann erkennen, daß es vielleicht nicht noch eine technische Schikane sein kann, die etwas unmöglich macht, sondern letztlich nur sicherheitsbewußtes Arbeiten unter Nutzung der vorhandenen Sicherheitseinrichtungen zum Erfolg führt.

Liste der neuen Wörter

ARBEITSSCHUTZ	1
ARBEIT SCHUTZ	
WORK - PROTECTION	
ARBEITSSICHERHEIT	1
ARBEIT SICHERHEIT	
WORK - SECURITY	
DONNERBU4CHSE	1
DONNER BU4CHSE	
THUNDER - TIN CAN	
GROSSWILDJA4GER	1
GROSS WILD JA4GER	
LARGE SCALE - WILD - HUNTER	
GROSSWILDJA4GERS	1
GROSS WILD JA4GERS	
LARGE SCALE - WILD - HUNTER	
HINZUSCHAUEN	1
PIRSCH	1
RISIKOVORAUSSCHAU	1
RISIKO VORAUSSCHAU	
RISK - FORECAST	
SICHERHEITSBEWUSSTES	1
UNFA4LLE	2
VERBESSUNG	1
VERB SUNG	
VERB	
VER SPEISTE	1

#### Logos Übersetzung

Tiger or wasp

EDGAR NILL which we have quoted in our ARBEITSSCHUTZ-INFORMATIONEN already more often, a modern fable has devised in a contribution over risk-forecast. It/he warns to get across us against, in the reel of the big game hunter during/upon deployment of strategies for the improving the safety at work, which starts with binoculars and blunderbuss following the tiger, meanwhile, but dies at the prick of the wasp, which sat on the fruit, it/he - without to look - ate on the stalking the.

When we leave the accidents of the last year happening review, then there are some parallel for the big game hunter already. Non- technical lacks are there, which constitute the mass of the accidents, but rather critical phases in the daily operational occurrence which are not recognizable mostly beforehand. Therefore, each is called to track down hidden risks by looking ahead. One will then recognize that it can perhaps not be another technical harassment, which somewhat impossibly makes, in the final analysis, but rather leads only safety-conscious working to the success utilizing the available reliability provisions.

#### Redigierte Übersetzung

Tiger or wasp

EDGAR NILL, whom we have often quoted in our ARBEITSSCHUTZ-INFORMATIONEN, has devised a modern fable in a contribution about risk forecasting. When developing strategies for improving safety at work, he warns us against falling into the role of the big game hunter, who, on the track of the tiger, with binoculars and blunderbuss dies by the sting of the wasp which was on the fruit he ate - without looking - when stalking the tiger.

When we review the accidents of the last year, then there are some parallels with the big game hunter. It is not technical defects, which cause the bulk of the accidents, but rather critical phases in daily operations which are usually not foreseeable. Therefore, everyone is called on to identify hidden risks by forethought. In the final analysis, one will then recognize that it is not necessarily another technical hitch, which makes something impossible but rather only safety-conscious working, utilizing the available safety measures, which leads to success .

Muster-text 4

Lassen Sie mich an dieser Stelle sehr dankbar die Beteiligung spanischsprachiger Länder an unseren internationalen klinischen Prüfungsprogrammen vermerken.

'Mexico', oben bereits zweimal erwähnt, ist seit Jahren erfolgreich und aus dem Kreis der Länder für frühe klinische Prüfungen nicht wegzudenken. Die Zuwendung der Medizin und die verständnisvolle Unterstützung durch die zuständige Geschäftsführung und Landesleitung verdient besonders hervorgehoben zu werden.

Spanien, ebenfalls schon angeführt, hat sich mehr und mehr in die internationale klinische Prüfungsarbeit in frühen Phasen eingeschaltet; Anerkennung auch hier in Medizin, Geschäftsführung und Landesleitung für gute Ergebnisse.

Mit Freude ist die anwachsende Übernahme von medizinischen Projektleitungen in Argentinien zu registrieren; in weiteren Ländern, wie zum Beispiel, Brasilien, sind ähnliche Tendenzen zu erkennen.

Allen Beteiligten an klinischen Prüfungsprogrammen, die über lokale Erfordernisse hinausgehen, nochmals herzlichen Dank; dazu Mut für weitere gemeinsame Anstrengungen.

Mit diesen Ausführungen bin ich am Ende meines Referates angekommen. Ich danke Ihnen für Ihre Aufmerksamkeit und wünsche diesem 'Medical Directors'' Meeting' einen guten Verlauf und viel Erfolg.

Liste der neuen Wörter

DANKBAR	1
GESCHAFTSFÜHRUNG	2
GESCHAFTSFÜHRUNG	
BUSINESS - DIRECTION	
LANDESLEITUNG	2
LAND LEITUNG	
LAND - LINE	
PRÜFUNGSARBEIT	1
PRÜFUNGSARBEIT	
CHECK - WORK	
PRÜFUNGSPROGRAMM	1
PRÜFUNGSPROGRAMM	
CHECK - PROGRAM	
PRÜFUNGSPROGRAMMEN	1
PRÜFUNGSPROGRAMMEN	
CHECK - PROGRAM	
SPANISCHSPRECHENDER	1
WEGZUDENKEN	1

Please allow me to be very gratefully recorded at our international clinical trial programme at countries Spanish-speaking to/? this place the participation.

MEXICO, already twice mentioned above, is successful and unimaginable from of the circle of the countries for early clinical checks for years. Allowance of medicine and the understanding support through the appropriate business management and country management earned to be emphasized especially.

Spain, also already listed, has intervened more and more in the international clinical trial work in early phases; Acknowledgement also here into medicine, business management and country management for good results.

With pleasure, the growing acceptance of medical project directions should be recorded in argentina; in further countries, such as, for example, Brazils, similar tendencies should be recognized.

Again cordial thanks all participants at clinical trial programmes which exceed local requirements; in addition courage for further common efforts.

I have arrived with these executions at the end of my report. I thank you for your attention and a good course and many success wishes this MEDICAL DIRECTORS MEETING.

#### Redigierte Übersetzung

Please allow me to very gratefully remark upon the participation of the Spanish-speaking countries in our international clinical trial programme.

MEXICO, already mentioned above twice, has been successful for years and the group of the countries involved in early clinical trials is unconceivable without Mexico. The assistance of the medical departments and understanding support from the respective business and country management deserves special emphasis.

Spain, also already mentioned, has become increasingly involved in the early phases of international clinical trial work; thanks also to the medical department, business and country management for their good results.

With pleasure, the growing acceptance of medical project directions should be acknowledged in Argentina; in other countries, such as, for example, Brazil, similar tendencies should be recognized.

Again, cordial thanks to all participants in the clinical trial programmes, who have exceeded their local requirements; in addition courage for further common efforts.

With these remarks, I have now arrived at the end of my report. I thank you for your attention. I hope this MEDICAL DIRECTORS MEETING is a great success.