RESEARCHING TECHNICAL DOCUMENTS

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Abstract

Literature on intercultural technical communication suggests that cultural differences influence communication variables. However, there does not seem to be a convincing empirical base upon which the bold assumptions in scientific and practical publications can be founded. A small-scale study was carried out to look for culture-related textual differences in user manuals from Spain and the Netherlands. The results do not support the assumptions made in the literature.

1. Introduction

American people are more individualistic than Japanese. The Danish are less impressed by authority than the French. The Finns have another style of information processing than the Chinese. Dutch people attach much importance to typically feminine values such as solidarity and pleasant mutual relationships, and Spanish people have more appreciation for typically masculine values such as power and money.

Prejudice? Primitive ideas, grounded in a climate theory which has fortunately been superseded?1 Even today, assertions such as these can still be heard, often with reference to publications on subjects such as pitfalls in intercultural management or problems in intercultural communication.

In a number of these publications, sensible reservations are made as to the range of the conclusions from empirical studies. Hofstede, for in-

1 In a recent and often cited book on international business communication (Victor 1992), it is stated that "factors like climate do influence a nation's development and cultural mind-set" (p. 49).
stance, has stated many times that his findings on national culture only partly explain the values and behaviour of individuals in different countries. Other important variables are sex, profession, age group, etc. (see, for instance, Hofstede 1989, 193).

In publications by others, however, such reservations cannot always be found. In a study on cross-cultural analysis of U.S. and Flemish applications, for instance, the authors state that Belgians are less assertive, more humble, and less self-reliant in promoting themselves [as compared to Americans] (Connor et al. 1995, 459). In an article on cultural dimensions in international business operations, to give another example, the writer does not hesitate to qualify Germans and Swedes as good listeners, and Frenchmen and Spaniards as bad ones (Lewis 1994, p. 306). And in a paper on East West relationships, published in the same proceedings, the author expresses little doubt when stating that "we westerners learn by doing, while Asian people learn by memorizing, looking and listening", and that "we are taught to make decisions, while the Chinese leave the decisions to the family, the teacher, or the boss" (Aarvik 1994, 58).

During the past decade, intercultural issues have also penetrated the field of technical communication. As will be shown below, very strong assumptions are sometimes made in this field too about differences in documents and in communication strategies, differences between the North and the South, the East and the West, and the Anglo-Germanic and the Latin world. The question is whether there is an empirical base for the confirmation or refutation of these assumptions and of the communication advice that frequently accompanies them. This question, however, is not asked very frequently. In the first part of this paper, we will try to sketch a picture, admittedly a rather rough one, of the literature on intercultural technical communication. We will then present some of the findings of a study that we have done, and that - in our view - is one of the few exceptions so far to the rule that in intercultural communication research, empirical data only play second fiddle.
1. Facts or opinions?

Consider the following two examples of modern recommendations that are made to technical writers who have to design a document for a culture they are unfamiliar with. The examples are taken from Hoft (1995), a well-written bestseller on intercultural technical communication. In her chapter on performing international user-analysis, Hoft discusses the issue of writing style as follows:

Be aware of writing styles that prevail in other countries as compared to the writing style in your own country. [...] If you are performing radical localization on an information product, you should instruct the translator to emulate the writing style of the target country as closely as possible (Hoft 1995, 76).

and:

Writing styles vary from country to country. Many English-to-French translators describe American documentation as very repetitive, for example. Good English-to-French translators will delete the repetition in the American documentation to assume a more appropriate writing style for the French audience (p. 76).

For a technical writer the first advice may seem too vague, too unpractical and hence, useless. The second advice is a bit more specific, but it appears to be based on quicksand.

These examples may suggest that in a book such as Hoft’s, there is no reference to research or to theories on culture at all. That is not the case, however. Like many others in the field, Hoft pays much attention to so-called models of culture that have been proposed by Trompenaars, Hall, Victor and Hofstede (cf. Hoft 1995, 77-91). The latter model is no doubt the most famous and the most popular one. It was developed in the late sixties, when Hofstede was a researcher at IBM and did a large-scale multi-national survey on the employees’ personal values related to their work situation (cf. Hofstede 1984, 1989, 1991, 1993, 1995). Both his definition of culture and the dimensions of culture emerging from his survey, are quoted over and over again. Culture is described by Hofstede as "the collective programming of the mind which distinguishes the mem-
bers of one humane group from another" (1984, 21), or somewhat more concisely (in the subtitle of his book from 1991) as "the software of the mind".

From a statistical analysis of the answers he collected in his survey, Hofstede infers that there are five major factors that can be distinguished in this mental programming (Hofstede 1989, Bond/ Hofstede 1989):

- power-distance: how do subordinates value inequality?
  - high: France, Spain, Belgium
  - low: USA, Scandinavia, the Netherlands

- collectivism versus individualism: to what degree are individuals integrated into groups?
  - collectivistic: Japan, Mexico, Guatemala
  - individualistic: USA, the Netherlands, Belgium

- femininity versus masculinity: how are typically masculine work goals (money, recognition, challenges) valued, as opposed to typically feminine work goals (cooperation, security, pleasant relationships?)
  - masculine: USA, Japan, Spain, Belgium
  - feminine: Israel, Korea, the Netherlands

- uncertainty avoidance: to what extent do people feel threatened by unstructured or unknown situations?
  - strong: Greece, Spain, South Korea, Belgium
  - weak: USA, the Netherlands, Hong Kong, Great Britain

- long-term versus short-term orientation: to what extent are people willing to make sacrifices now, in order to be rewarded in the future?
  - long-term: Hong Kong, Japan, India
  - short-term: USA, Great-Britain, Brazil

How conveniently arranged this picture of cultural differences may seem, it is not without problems. First of all, as Hofstede himself has emphasized on various occasions, this model does not imply that every member of a cultural community shares the same values. These values are to be
regarded as typical for a culture as a whole. Hofstede (1984) performed analyses of variance on a large sample of his data to calculate the portion of the scores of his respondents that could be explained by their culture. It turned out that "of the total variance in the answers of the 3220 respondents in the variance analyses, only 4.2% is accounted for by their belonging to one of the ten nationalities of the sample" (p. 52). Occupation, sex, age, and most importantly, purely individual differences, together account for a much, much larger portion of the variance in Hofstede’s results.

Another objection that could be raised against Hofstede’s generalizations is that the questionnaires used by Hofstede are coloured by the typically western perspective of the researcher. As Hofstede (1995) himself states, his questionnaire was not an ideal instrument for intercultural research (p. 316). It might be that other questionnaires would have led to different answers, and hence to different dimensions of culture.

A more practical problem is the following. Technical writers who want information on what to do when designing a document for a culture they are unfamiliar with, are left rather helpless after reading Hofstede’s conclusions. There is a wide gap between general insights into the values that a certain audience might share, and specific knowledge of text characteristics that would lead to successful documents for that same audience. How, for instance, should femininity (or masculinity) be taken into account when describing how to install a computer program, and what is a sensible way, if any, to deal with high power distance when creating an index or a table of contents?

In the literature on intercultural technical communication, practical, down-to-earth questions such as these are only rarely followed by convincing answers based on general models of culture such as that of Hofstede. There are exceptions, however, where the advice does seem to be related to this kind of research finding. Warren (1994) for instance, taking Hall’s and Victor’s models of culture as a starting point, distinguishes between so-called monochronic cultures, where time is viewed as a quickly moving river: linear and not renewable, and polychronic cultures, where time is perceived more like a slowly moving pool: non-linear, and renewable. One of Warren’s assertions is that readers in a monochronic culture are in need of quick reference manuals, overviews and summaries, where-
as readers in a polychronic culture are better served by documents that do not ask for hurry, focus on details, and build the picture slowly (p. 178-181). Obviously the reasoning on which an advice such as this is grounded, goes as follows:

**First premise:** Culture X and culture Y differ with respect to dimension A.

**Second premise:** If two cultures differ for dimension A, then this difference will manifest itself in communication variable B.

**Conclusion:** Communication in culture X will differ from communication in culture Y for variable B.

**By implication:** Technical documents for culture X should differ from technical documents for culture Y with regard to variable B.

This reasoning, appealing as it may seem, raises some problems. Regarding the first premise: it is at present hard to find real clear-cut cases of two cultures that differ with respect to a variable such as for instance time-perception. As Warren himself suggests, the differences are often less extreme because of the influence of global communications (p. 180). The second premise seems to be refuted most of the time by empirical or theoretical evidence. Take this case for instance: how can we know for sure that in a polychronic culture, readers will tend to focus on details and build the picture slowly? But even supposing that the conclusion is correct, then the implication still seems questionable. Perhaps after a period of habituation, readers of technical documentation who are used to lengthy instructions will prefer more concise documents, whatever the cultural background of these readers might be. Perhaps in technical documentation, quality is a universal aspect that outweighs all kinds of cultural influences. Only empirical research can provide the answers.

So far, only a few empirical studies on specific intercultural communication questions have been carried out, and the reports that have been published are not as convincing as one would have hoped. A recent example can be found in *Technical Communication*, in which Mirshafiei (1994) presents a study on the influence of cultural background on characteristics of students’ compositions. His subjects were some 220 American university students, who had immigrated to the United States and had been living there for at least three years. Instead of offering the reader a quantitative overview of the results of his analysis, Mirshafiei
confines himself to a series of anecdotal examples, which he provides with his own comments. He states, for example:

Arabs, Indians, Pakistanis, and Persians are encouraged by their culture to use a highly decorative and often hyperbolic language to express themselves. Americans, however, prefer to be more explicit in communicating with one another (p. 277).

and:

This [extract from a reference letter that the author received from Iran] illustrates distinct stylistic differences from a typical American letter of recommendation because of the influence of the writer's culture. Facts in this letter are given in a highly exaggerated language, and generality has replaced specificity (p. 280).

and:

The above extract [example of a paragraph written by a student from the Middle-East] illustrates circular presentation, which Western readers may consider "lack of organization". Such writing is "unfocused" as judged by our Aristotelian thinking. Apparently influenced by their culture, students who write in this way learned to use a circular, rather than linear, structure (p. 279).

The type of reasoning underlying statements like these seems to go as follows:

**First premise:** Culture X and culture Y differ on variable A.

**Second premise:** If cultural variable A affects technical communication, then this will manifest itself in text characteristic B.

**Third premise:** Analysis shows that texts from culture X differ from texts from culture Y in characteristic B.

**Conclusion:** Cultural variable A does affect technical communication.

Apart from the serious objections that might be raised against the way each of the premises is ascertained by the author, the argument as a whole must be regarded as unsound. It is similar to a case such as the following:
If \(A\), then \(B\)
\(B\)
Conclusion: \(B\)

According to *Aristotelian thinking*, this is a clear-cut example of a fallacy. Only if it is plausible that variation in cultural variable \(A\) is not merely a sufficient, but also a necessary condition for variation in text characteristic \(B\), can the reasoning be considered valid. Otherwise, there is no justification why possible textual differences should not be attributed to other than cultural factors, such as for instance language differences or differences in educational background.

In another, even more recent, example of empirical research into intercultural communication, the same type of fallacy can be found, and it is perhaps even more striking. We refer to the article by Connor, Davis and De Rycker which we mentioned in the introduction (Connor et al. 1995). The authors present the results of a study on similarities and differences between US and Flemish letters of job application. They compared 74 cover letters; 37 letters were written by Flemish students, the others by American students. The Flemings were all full-time students, their average age was 19, their first language was Dutch, their university subject was business, and none of them had any serious work experience. The American students were on average "much older", their first language was English, their university subjects varied, and most of them were part-time students with considerable serious work experience (p. 467).

We quote two statements from the first part of the article:

Although no previous research exists investigating cross-cultural differences in letter writing by Flemish speakers, one can expect Flemish students to differ from U.S. students because of different styles of self-promotion. (p. 459).

and:

This lack of self-promotion [of the Flemish, CJ/AvE] relates to Hofstede's dimension of "uncertainty avoidance", the extent to which people accept that power is distributed unequally. Belgium ranks much higher than the U.S. on this dimension. This higher degree of trust which Belgians and Flemings alike [sic!, CJ/ AvE] tend to put in authority clearly affects their letters of application. If you trust your superior
(i.e. your prospective employer) to make the right decisions, there is no need for you to "come on strong" or to "glorify your success" yourself (p. 459).

In these statements, the first two premises from the invalid reasoning described above can be recognised:

First premise: Culture X and culture Y differ concerning variable A (here: the Flemish and the Americans differ in uncertainty avoidance).

Second premise: If cultural variable A affects technical communication, then this will manifest itself in text characteristic B (here: differences in uncertainty avoidance lead to differences in styles of self-promotion in application letters).

How about the third premise? Are the texts from culture X different from the texts from culture Y with regard to characteristic B? Following the authors, their text analysis did indeed reveal that the American letters exhibited a larger degree of informativeness and transparency than the Flemish ones, that the Flemish applicants produced shorter letters, and that the Flemish made more mistakes especially at the level of spelling and sentence grammar. The authors lump these results together by stating that:

Our data reveal that the U.S. job applicants are much better at promoting themselves. [...] By contrast, the Flemish group seem to content themselves with referring the prospective employer to the enclosed resumé and do not generally provide supporting arguments (p. 473).

After this third premise, the conclusion of the fallacy that cultural variable A (here: uncertainty avoidance) does affect communication (here: applying for a job) seems obvious. The authors finish by stating that:

Just as in real life, [the applicants] were very much left to their own devices. It is this fact which allows us to make reliable generalizations about cross-cultural variation in the present study (p. 473).

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2 That last result can hardly have come as a surprise in view of the fact that all letters, including those by the Flemish, had to be written in English.
We cannot agree with the authors here. The design of their study simply does not permit any generalisation as to the influence of culture on communication. The list of alternative, competing explanations for the alleged differences is far too long.

Is this study an exception or is it typical for the empirical research in the field? We came across only very few studies, the design of which could in principle allow for conclusions about cross-cultural variation in text characteristics. An example is a study done by Mulder and Ulijn (Ulijn, forthcoming). Mulder and Ulijn presented some 250 subjects, students and professional writers from France and from the Netherlands with the following assignment:

Suppose as a technical writer you are asked to design an instructional text accompanying a coffee machine. Below, you will find a list of the section titles that you will have to use. The list is ordered alphabetically. Please arrange the order in the way you think best.

- Appendix
- Introduction
- Maintenance
- Operation
- Structure
- Technical data
- Troubleshooting

It proved that out of the 5040 possible orders, only 4 options were chosen by the vast majority of the subjects. As might be expected, they always chose the Introduction section and the Structure section as the first two elements of the list, and the appendix as the last one. What was more interesting, however, was an overall preference for the order of the remaining four parts:

- Maintenance (MA)
- Operation (OP)
- Technical data (TD)
- Troubleshooting (TS)

In nearly all cases, three of these elements were put in the same order:

OP-MA-TS
The only variation concerned the Technical Data section. The title of that section was placed before, after, or between the other elements:

1  TD-OP-MA-TS
2  OP-MA-TS-TD
3  OP-TD-MA-TS
4  OP-MA-TD-TS

An obvious question, then, is if there was a systematic difference between the French and the Dutch subjects when it comes to a preference for order 1, 2, 3, or 4. As for the writers, a re-analysis of the data showed no significant influence of "culture" on preference. As for the students, the Dutch subjects proved to have clear preference for option 2, while the French students liked option 1 just as well. That statistically significant difference cannot simply be attributed to a cultural difference, however. There is an alternative explanation that should not be ruled out: the French students all had a background of four years in economics, while the Dutch students were all in their third or fourth year of an engineering study.

All things considered, it seems fair to say that - although the author claims otherwise - this study, again, has not presented us with evidence that cultural differences influence characteristics of technical communication. Perhaps such an influence simply does not exist. Perhaps another kind of study would be needed to reveal it. In the remainder of this paper we will present the design and the results of a small-scale study in which a different approach was taken.

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3 Chi-square-test; p = 0.389
4 Chi-square-test; p = 0.000
5 In the Conclusions-section, Ulijn states that "Dutch and French technical writers (on the exporters or suppliers side) appeared to use different structures in organizing the contents [...]", and also that "the above findings suggest that a French client would expect another type of instruction about a product than a Dutch".
In this study we did not first speculate about possible influences of cultural variables, and then try to find traces of these variables in communication products. We went the other way around. We started by analyzing technical documents written in different countries, and we considered attributing possible differences to cultural factors only if these differences proved to be statistically significant, and if there were no other possible explanations apart from culture.

The set of texts that we analyzed consisted of 18 real-world user manuals for ordinary consumer goods: 9 manuals were written in Spanish, the other 9 in Dutch. We used manuals that came along with similar Spanish and Dutch products. In all cases the texts had been written by Dutch or Spanish technical writers. We only used original documents, and no translations. Table 1 gives an overview of the texts that we analyzed.

<table>
<thead>
<tr>
<th>Spanish</th>
<th>Dutch</th>
</tr>
</thead>
<tbody>
<tr>
<td>mobile phone</td>
<td>Solac</td>
</tr>
<tr>
<td>mixing tap</td>
<td>Roca</td>
</tr>
<tr>
<td>rowing machine</td>
<td>BH</td>
</tr>
<tr>
<td>washing machine</td>
<td>Corcho</td>
</tr>
<tr>
<td>oven</td>
<td>Fagor</td>
</tr>
<tr>
<td>touch-tone telephone</td>
<td>Telefónica</td>
</tr>
<tr>
<td>stove</td>
<td>Fagor</td>
</tr>
<tr>
<td>blower</td>
<td>Nodor</td>
</tr>
<tr>
<td>heater</td>
<td>Jata</td>
</tr>
</tbody>
</table>

Table 1: Text topics

The texts were analyzed at three levels. The first level was the top textual level: that of the chapters. We investigated whether the four *kernel chap-
ters that Mulder and Ulijn distinguished \((TD, OP, MA, TS)\) all occurred in our texts. This did not turn out to be the case. As is shown in table 2, in ten texts one or two of these kernel chapters were missing, and when all four kernel chapters were present, they were not always arranged in one of the four possible orders that Mulder and Ulijn found in their experiment. Our most important finding, however, was that there were no systematic differences in the arrangement of the chapters between the Spanish and the Dutch manuals.

![Table 2: Findings on the top textual level: ordering of kernel chapters](image)

We also analyzed our manuals on the paragraph level. We came across three different forms in which the information was presented: step-by-step instructions, bulleted lists and ordinary paragraphs consisting of normal sentences. Table 3 shows the differences that we found in frequency and length of these three elements in our two sets of texts.
There were three significant differences: Dutch manuals contain more paragraphs, Dutch paragraphs are shorter, and Dutch bulleted lists are shorter. It is hard to find an explanation for these differences. The languages involved do not differ in any way that seems relevant for our findings. It is more probable that the differences we found are simply due to differences in isolated text conventions. It is hardly conceivable that culture, as defined by Hofstede, can be the explanation. How could the number of paragraphs or the average length of bulleted lists be accounted for by variables such as power distance or uncertainty avoidance?

The third part of the textual analysis was done on the speech act level. We focused on one type of speech act that is crucial in a manual: the instruction. Instructions can be distinguished according to their content and according to their form. We decided to do both (see tables 4 and 5).

The distinctions in table 5 deserve some explanation. Unlike in English, where the stem of the verb and the infinitive are the same, in Spanish and Dutch these conjugations have different forms. If in these languages the stem of a verb is used as an imperative, we speak of imperative mood type 1. If the infinitive is used as an imperative, that is referred to as imperative mood type 2. There are a great number of other possibilities writers can use to express an instruction. One of these possibilities

<table>
<thead>
<tr>
<th></th>
<th>Spanish</th>
<th>Dutch</th>
<th>difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>step-by-step procedures</td>
<td>number per 1000 syllables</td>
<td>1.0</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>number of steps on average</td>
<td>2.9</td>
<td>2.8</td>
</tr>
<tr>
<td>bulleted lists</td>
<td>number per 1000 syllables</td>
<td>1.8</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>number of elements on average</td>
<td>5.0</td>
<td>3.3</td>
</tr>
<tr>
<td>paragraphs</td>
<td>number per 1000 syllables</td>
<td>9.4</td>
<td>14.7</td>
</tr>
<tr>
<td></td>
<td>number of syllables on average</td>
<td>62.6</td>
<td>48.0</td>
</tr>
</tbody>
</table>

* significant difference (t-test, two-sided; alpha = 0.05)
is to use a nominalisation of the verb, followed by something like "is necessary" or "has to be done".

<table>
<thead>
<tr>
<th>content</th>
<th>example</th>
</tr>
</thead>
<tbody>
<tr>
<td>action</td>
<td>Dial a telephone number.</td>
</tr>
<tr>
<td>verification</td>
<td>Check the tyre pressure.</td>
</tr>
<tr>
<td>reading</td>
<td>Read this manual carefully before using the equipment.</td>
</tr>
<tr>
<td>passivity</td>
<td>Wait until the light turns red.</td>
</tr>
<tr>
<td>implicit instruction</td>
<td>Switch A should be ON.</td>
</tr>
</tbody>
</table>

Table 4: Instructions by content

<table>
<thead>
<tr>
<th>form</th>
<th>example</th>
</tr>
</thead>
<tbody>
<tr>
<td>imperative mood 1</td>
<td>Turn switch A clockwise.</td>
</tr>
<tr>
<td>imperative mood 2</td>
<td>no English equivalent</td>
</tr>
<tr>
<td>nominalisation</td>
<td>Cleaning the machine daily is necessary.</td>
</tr>
</tbody>
</table>

Table 5: Instructions by form

Table 6 and table 7 show the results of the comparisons we made between the Dutch and the Spanish texts.6

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6 We also searched for relations between the variables content of the instruction and form of the instruction on the one hand, and the variable type of chapter (OP, TS, MA, TD) on the other. We found no statistically significant results.
As to the content of the instructions, we did not find any significant differences: the distribution of the various categories in different content categories was roughly similar. As to the form, there was one significant difference. In Spanish the use of imperative mood type 2 is far more common than it is in Dutch. The explanation for this difference is quite straightforward. In Dutch the natural location for an infinitive is the end of the sentence. So, if a Dutch writer uses an imperative mood type 2, he will always have to put the verb last. If, on the other hand, he uses an imperative mood type 1 (the stem of the verb), he will have to put the verb upfront. In Spanish, the situation is different. Here, both the stem and the infinitive are always located in a verbal constituent that comes

<table>
<thead>
<tr>
<th>Table 6: Findings on the speech act level: instructions by content</th>
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<tbody>
<tr>
<td>Spanish</td>
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<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>action</td>
</tr>
<tr>
<td>verification</td>
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<tr>
<td>reading</td>
</tr>
<tr>
<td>passivity</td>
</tr>
<tr>
<td>implicit instruction</td>
</tr>
</tbody>
</table>

* significant difference (t-test, two-sided; alpha = 0.05)

<table>
<thead>
<tr>
<th>Table 7: Findings on the speech act level: instructions by form</th>
</tr>
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<tbody>
<tr>
<td>Spanish</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>imperative mood 1</td>
</tr>
<tr>
<td>imperative mood 2</td>
</tr>
<tr>
<td>nominalisation</td>
</tr>
<tr>
<td>other</td>
</tr>
</tbody>
</table>
upfront. Many writers of technical documents correctly consider the verb as the most important part of the instruction, and hence prefer to mention the verb as early as possible. In Spanish, that leaves a technical writer with two options: the infinitive or the stem. In Dutch there is only one possibility: the stem. Precisely this point is reflected in table 7.

Is the difference between the Spanish and the Dutch in preference for imperative moods restricted to text writers, or do readers from these countries show the same variation? We tried to answer this question in a survey among Spanish and Dutch readers of manuals. 70 randomly chosen Spaniards and Dutchmen (35 per group) were interviewed to get some ideas as to their preferences on the paragraph and the speech act level. The respondents were asked to read 6*2 fragments of user manuals, all written in the language of the respondent. Six fragments were presented, each in two versions that only differed for one paragraph or speech act variable. The readers were asked which version they thought was most suitable for a user manual. The results showed only one systematic difference between the Spanish and the Dutch respondents: the Dutch clearly preferred the imperative mood type 1 (the stem), whereas the Spanish did not favour this mood over its alternative (the infinitive).

All-in-all, this study has revealed very limited differences between Spanish and Dutch technical documents. On the top textual level, no differences were found. On the speech act level, there was only one difference, which had to be attributed to a purely linguistic characteristic. Only on the paragraph level we found some differences that could not be accounted for by the languages involved. These differences however, seem to be a matter of isolated text conventions rather than the effect of diverging value systems. It should be kept in mind, however, that this was only a small-scale study. We would applaud new, serious research with more technical documents, possibly from other countries, and with different methods of analysis. Perhaps such research would yield more and other text differences than we have found, and would show results that can only be explained by cultural variety. Without such compelling data, however, we see no reason to assume that culture’s consequences extend to technical communication.
References


Zur Anwenderfreundlichkeit computerbasierter Technischer Dokumentation: Die Textlinguistik als *missing link* zwischen Hypertext-Forschung und Usability Engineering?

**BENEDIKT LUTZ**

**Abstract**

In the last decade, computer aided technical documentation has become an important source of information. Especially hypertext structures are applied in computerized documents. These structures allow for complex network structures that were formerly impossible. A considerable amount of research has been done already on these network structures; it appears that problems of orientation, searching, and designing appropriate structures are important here. In this paper it is argued that applied textlinguistics offers a relevant theoretical contribution to the analysis and design of hypertext structures and usability engineering.

1. Anwenderfreundlichkeit und Technische Dokumentation


Angesichts dieser Situation ist eine klar strukturierte und hilfreiche Anwenderdokumentation außerordentlich wichtig. Technisch hat sich in den