Research in Technical Communication in the Netherlands

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SUMMARY

In the Netherlands, research in technical communication is a part of research in "functional text," which has concrete goals that must be achieved by lay readers. Three recent studies focus on the use of and failure to use software manuals, the minimalist approach and learning styles, and the effect of using decision tables. Other research is being done in five Dutch universities, and research proceedings are being published.

In the Netherlands, technical communication has only recently been considered a potentially interesting research topic. Consequently, just as in other Western European countries, Dutch research activities in this field are fairly new and not yet very extensive. But it seems fair to say that Dutch researchers have achieved some noteworthy results. This article gives a concise report, focusing especially on work done by advanced university students.

Perhaps one of the most distinctive features of Dutch research into technical communication is that it is integrated into a broader context: the context of what in the Netherlands is referred to as "functional text" research. *Functional texts* are texts that have very concrete and specific goals, which in most cases lay audiences must achieve. Examples include government forms, company safety rules, computer manuals, and instructions for consumer electronic

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products. Readers of functional texts want to *use* the information in the text to perform their tasks, and do not have much interest in reading the text for its own merits.

This article summarizes three recently completed Dutch studies in the field of functional text research. The projects focus on different issues in technical communication. The first study was performed by Frits van Dijk, an alumnus from Utrecht, now an employee in a software company (Van Dijk 1991). The other two projects were carried out by graduate students from Utrecht University, in close collaboration with their university professor.

USE OF AND FAILURE TO USE SOFTWARE MANUALS

In the Netherlands, many private houses and apartments are rented out by housing corporations. Naturally, these nonprofit organizations have a lot of

financial and administrative tasks to fulfill. To computerize this work as much as possible, and to reduce the costs for developing and maintaining the software needed, the Dutch housing corporations collaborated in founding a software company of their own. NCCW, as this organization is called, has only one type of client: employees of the housing corporations that are affiliated.

For some time now, the help desk of NCCW has been very busy. Exact figures are not available, but some ten thousand phone calls a year about software problems seems to be a conservative estimate. Some of the users' problems cannot be solved by consulting the manual that accompanies the software. But for the majority of the problems, it is fair to say that the answer is in the manual and that the phone calls would not have been necessary if the callers had found and used the appropriate information. This situation, in addition to complaints on the user-unfriendliness of the manuals, led NCCW to survey the way the existing manuals are used and appreciated.

A form was sent to all housing corporation employees who make use of NCCW software in their daily work; 551 employees (81%) filled in the form. The form contained questions like "If you meet problems using our software, what is your favorite way to find a solution?", "How often do you make use of our software manuals?" and "If you never use one of our manuals, why is that so?" For all questions a multiple choice format was used, the last option saying "other, namely . . ."

Surprisingly enough and despite lots of problems and complaints, the manuals turned out to be the most popular source of information for the software users. Consulting manuals is more popular than asking colleagues, taking a trial-and-error approach, or calling the help desk. Table 1 shows the exact figures.

The "other methods" that some of the respondents mentioned included calling other NCCW clients and turning off the computer and going home. When asked how often they used their manuals, 16% of the respondents answered "frequently," 6% said "never," and the vast majority (78%) answered "every now and then."

Why did respondents say that they sometimes did not use their manuals? As Table 2 shows, respondents frequently felt that other methods worked faster, that it was too hard to find the proper information in the manual, and that the manual did not tell them what to do.

Table 1. Sources of information in order of preference

Respondents preferred	
To examine the manual	41%
To ask colleagues	24%
Trial and error	23%
To call the help desk	11%
Other methods	1%

Table 2. Reasons for not using a manual

Why respondents sometimes don't use the manual	
Other methods work faster	42%
The manual doesn't tell me what to do	28%
It is hard to find the information	22%
Other reasons (e.g., the manual is too far away)	8%

As a result of this survey, NCCW decided to try to improve the quality of its manuals. Most clients seem to have a basic willingness to use the manuals; that they do not always do so can partly be explained by text characteristics that could be changed. One approach to manual writing that could help solve this problem is the minimalist approach advocated by Carroll (1990). It is this approach, promising as it seems at least for new software users, that was the topic of another study at NCCW, this time performed by a graduate student from Utrecht University.

Minimalist Approach and Learning Style

Carroll, in his *Nurnberg Funnel*, reported on strategies adopted by adult learners. He found, among other things, that they

- Are impatient and do not follow directions willingly or well
- Skim while reading texts and rarely read them fully
- Make many kinds of errors, but learn from correcting them
- Are motivated most by self-initiated exploration

According to Carroll, the best way for manual designers to respond to such behavior is to take a

minimalist approach. As he points out, the key idea in this approach is to present the smallest possible obstacle to the learner's efforts, and to accommodate, even to exploit, their learning strategies. A minimalist manual therefore leaves out expository material, introductory material, reviews and previews, rote exercises, and procedural details. Error recognition and recovery information and "On Your Own" exercises are added.

Inspiring as this minimalist approach and the first results as reported by Carroll may be, some questions have not yet been answered fully. Hester Glasbeek, the student who carried out this project, has concentrated on one of these questions (Glasbeek 1992). She wondered whether the minimalist approach would be equally helpful to learners with various learning styles, so she challenged Carroll's implicit assumption that all learners are equally active, just as did Redish (1987), who found that there are readers and nonreaders, risktakers and those who want to have their hands held. Glasbeek presumed that people's learning styles can differ noticeably, and that these differences can have a strong impact on the way software users use a manual.

To test her assumption, Glasbeek first constructed a minimal manual, following the admittedly minimal instructions given by Carroll. Then she asked 55 NCCW employees to react (in writing) to a set of statements concerning their learning style. The statements looked like the following: "I try to get to know new computer programs by trial and error," or "Before working with a new computer program, I always read the manual." All employees who were asked to react to the statements belonged to the target group for whom the software and the manual was written; 31 employees sent in their reactions.

Based on their reactions to the statements, Glasbeek characterized five of the respondents as "predominantly self-reliant" and five others as "predominantly manual-oriented." These ten subjects were invited to participate in an experiment where the effects of the minimal manual on subjects with different learning styles were tested. The subjects were not informed of the specific goal of the experiment.

The 21 respondents who had scored less extremely, and had not presented themselves as typically self-reliant or as typically manual-oriented, did not get an invitation for the experiment. This measure was taken to ensure that there would be a serious difference in the learning styles of the two

groups that would be compared. To maximize the chance that learning style would be the only, or at least the main, difference between the two groups of five subjects, Glasbeek controlled for other variables, like level of education, experience with computers, and experience with the kind of software that would be used in the experiment. There proved to be no systematic differences.

In the experiment, the subjects who had been selected were asked to get acquainted with the new software by using the minimal manual that Glasbeek had written, and by doing the "On Your Own" exercises that were included. The subjects were asked to think aloud and to evaluate their learning experience afterwards.

As Glasbeek predicted, some clear differences emerged between the five predominantly self-reliant and the five predominantly manual-oriented subjects. It turned out that the self-reliant subjects really adopted an exploratory strategy. Two of them, for instance, only looked at the manual after examining all the menus contained in the program. The self-reliant learners felt rather comfortable in using the minimal manual. None of them rated the manual as "difficult" or "rather difficult." Four of them stated that they would appreciate it if all their manuals would be like the one they had worked with in this experiment.

The five manual-oriented subjects were often confused by the deliberate incompleteness of the instructions and by the absence of introductory sections. Their appreciation of the minimal manual was less favorable: They missed the step-by-step approach and sometimes felt abandoned.

The five manual-oriented subjects, on the other hand, were often confused by the deliberate incompleteness of the instructions and by the absence of introductory sections. Their appreciation of the minimal manual was less favorable: They missed the step-by-step approach and sometimes felt abandoned. Four of these manual-oriented learners rated the manual as "difficult" or "rather difficult." Only two of five stated that they would prefer minimal manuals to the more traditional ones they were used to. This small-scale study suggests that a minimal manual works for some types of people but

not for others. Perhaps in other, more extensive experiments, this issue could be elaborated further.

EFFECTS OF USING DECISION TABLES

One of the major issues in Dutch functional text research concerns the effects of specific text variables on text quality. A recent study on this subject was performed by Huub Koomen, a graduate student of Utrecht University (Koomen 1992). He tried to find out whether the claim, sometimes found in literature, that decision tables work better than continuous prose, can be sustained. Koomen set up an experiment using sections of a software manual that goes with *ALEXIS*, a Dutch computer program meant to help teachers comment on student papers (Janset et al. 1987). Two types of texts were constructed: decision tables, looking like the one in Figure 1, and prose alternatives, looking like the one in Figure 2.

All in all, 40 texts were tested: 20 decision tables and 20 prose equivalents. Twenty subjects participated, none of whom were familiar with either the *ALEXIS* manual or with the program itself. The subjects were asked to imagine that they were teachers using *ALEXIS* to comment on students' papers, and that they had to solve 20 relatively easy software problems, half using a decision table and half using the prose alternative. The decision tables and prose alternatives were randomly distributed.

Every time a decision table or prose alternative was presented to a subject, it was accompanied by a corresponding problem, like the following: "Suppose you wanted to evaluate students from groups 5, 7, and 9, what exactly would you do here?" Each problem was followed by four possible solutions, out of which the subjects were asked to choose the best one. The subjects were asked to do so as quickly as possible, and to register the starting and stopping times for each problem. To help the subjects in this time registration task, a big digital clock was hung on the wall of the lab where the experiment took place.

Koomen found no statistically significant difference in the correctness of the solutions the subjects produced. Using decision tables and using prose resulted in fewer than 5% mistakes. There was, however, a difference in the time spent on finding the solutions, as Table 3 shows. It took the subjects 2 seconds less to examine a decision table than to read a prose text, a statistically significant

Group

Here's where you announce which group or groups of students you are going to evaluate. ALEXIS offers space for 100 groups maximum.

What do you want	What do you do?
Evaluate students from all groups.	Leave the default value at 099.
Evaluate students from one group.	Remove the default value 099 and fill in the correct group number.
Evalute students from several successive groups.	Remove the default value 099 and fill in the lowest and the highest group number; put a hyphen (-) between these numbers.
Evaluate students from several nonsuccessive groups.	Remove the default value 099 and fill in the correct group numbers; separate these numbers by a comma.

Figure 1. Example of a decision table

Group

Here's where you announce which group or groups of students you are going to evaluate. ALEXIS offers space for 100 groups maximum.

If you want to evaluate students from all groups, leave the default value at 099.

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If you want to evaluate students from several successive groups, remove the default value 099 and fill in the lowest and the highest group number; put a hyphen (-) between these numbers.

If you want to evaluate students from several nonsuccessive groups, remove the default value 099 and fill in correct group numbers; separate these numbers by a comma.

Figure 2. Example of continuous prose

Table 3. Average amounts of time spent

Text Type	Reading Time (seconds)
Continuous prose	22.3
Decision table	20.3

difference (p < 0.05). Koomen found no significant interactions of text type and text length, nor of text type and position of the correct answer in the text.

Koomen's results seem to be in line with what Wright and Reid (1973) found when they compared prose fragments with algorithms, short sentences, and decision tables. They report that especially for easier problems, the decision tables were quicker to use without being any more error prone than the other versions. What Wright and Reid do not report, however, was how their subjects reacted to the various text versions.

Koomen, on the contrary, did ask his subjects for an evaluation. It turned out that they thought very highly of the beneficial effects of decision tables (Table 4). Not only did all subjects believe that decision tables were quicker to use, but 19 out of 20 also stated that using a decision table would more frequently result in a correct answer—perhaps a bit optimistically, considering the results of the experiment in which they had participated. The subjects were also asked to express their appreciation of the two text types on a scale from 1 to 10 (Table 5).

The average score was 6.2 for prose texts and 8.4 for decision tables. The difference was statistically significant (p < 0.05). Koomen concluded that if the information in the text of a software manual is not very difficult, decision tables are preferable to continuous prose. People read tables faster, they do not make more mistakes, and they appreciate the tables—perhaps even somewhat too highly, if the real size of the differences is considered.

OTHER DUTCH RESEARCH

The picture of recent Dutch research sketched so far is not very extensive: Only three studies are described, all carried out by students of the same university. However, more studies into various aspects of functional texts are being carried out in the Netherlands. Almost all of this research is done at five universities. The universities of Twente, Delft, Eindhoven, Tilburg, and Utrecht now all have Centers for Language and Communication (albeit sometimes under a different name), where teachers, in addition to their lecturing and managing activities, spend some 30% of their time in doing research. All in all, some 30 teachers are using their research time on questions concerning functional texts. Sometimes they work alone, but more often they collaborate with colleagues of their own institute or another

Table 4. Evaluation of decision tables compared to continuous prose

Statement	Subjects Who Agreed (n = 20)
Decision tables are quicker to use	20
Decision tables lead more often to a correct answer	19

Table 5. Appreciation scores for decision tables and continuous prose

Text Type	Subjects' Appreciation Score (max. 10)
Decision table	8.4
Continuous prose	6.2

university. Especially at the larger universities, Utrecht for instance, it is also becoming common practice to work together with graduate students. At Utrecht University, some 50 students a year write theses on functional text topics, and a number of these theses qualify as the basis for a publication.

Articles on functional text research, including aspects of technical communication, are published in Dutch scientific journals like the *Tijdschrift voor Taalbeheersing (Journal for Discourse Studies)* or in one of the Dutch professional journals, like *Twioscoop* or *Communicatief*. Apart from scientific and professional journals, research results are published in monographs, in Ph.D. dissertations, and in conference proceedings. Most of the time the publications are in Dutch, but sometimes an international audience is addressed. There have been articles for instance in the *Information Design Journal* (Steehouder and Jansen 1987) and in the *Journal of Technical Writing and Communication* (Jansen and Steehouder 1992).

In 1992 the proceedings from a conference on Functional Text Quality were published. This international conference took place in Utrecht in 1991. Included in the proceedings are Dutch, German, Belgian, and American studies on such topics as intercultural business communication, direct mail, government forms, and methods for evaluating text quality (Pander Maat and Steehouder

1992). In May 1993, a follow-up conference was organized, this time in Enschede; the main theme of the conference was the quality of technical documentation (Jansen et al. in prep.).

All these activities demonstrate the growing importance of subjects like "technical communication" and "functional text quality" as research topics in the Netherlands. We hope that there will be new studies soon, with results not only interesting to Dutch readers, but also appealing to an international forum. Ω

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• Communication—A Global Problem •

When someone at my house spouts some seeming nonsense, we all respond, questioningly, "Communication—America's problem!" We no longer remember how this got started, but now it's a tradition, and it requires the spouter to "kindly do the needful" to help the others understand.

Technical communication isn't just writing. I knew this all along, but I'm constantly reminded. A case in point is the production of our chapter's membership directories. First I went to one of the new super-duper office-supply stores that have everything including a copy service. I planned to save the chapter some money by having our book printed as cheaply as possible. So I took my carefully laid-out originals to the store, said "copy these on white, recycled paper, make the cover gray card stock, and call me in the morning." And that's what I got. The paper is actually too thin to have printing on both sides—the ink shows through, but I didn't think of that and apparently the helping person either didn't know or didn't consider it his responsibility to suggest heavier paper. Okay, I'll make a note, and it'll be better next time.

On to the mail service to have the books folded and stapled. Simple, right? Can't do this part wrong, right? I wanted the books stapled through the center and then folded. No, they folded them and stapled all the way through on the outside. Next time I'll take a sample, draw a picture, write some documentation!

They say that computers do exactly what you tell them to do. Period. What about their creators? I find all too often that people do only what's required. You get what you ask for.

How can we expect President Bush and Saddam Hussein to communicate across the world when we can't even communicate with the person across the counter? We make a joke of it at home but, really, communication is a *global* problem. It's a dirty job, and we've *all* got to do it.

Maggie Wilson

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