

Summary

1 Introduction

This study was set up because of a specific problem with the reading-to-write dimension of academic writing: using and processing literature (theory) in a master's thesis. Master students experience difficulties in the selection, analysis and transformation of literature into a text. Supervisors are often not content with the results. They complain about an abundance of quotations, 'patchwork', and so on.

2 Pilot Study: Exploration of the Problem

In a pilot study, problems with academic writing in general, and, more specific, problems concerning the use of literature, were explored. Analyses of descriptive as well as prescriptive studies, and the results of a small survey led to the conclusion that our study had best be focused on the interaction between student writers and their supervisors. The following arguments for that choice emerged from the pilot study:

- Using / processing literature within academic writing is a major problem according to several authors.
- Instructions for this task are obscure and varied.
- In the academic world, even within the disciplines, hardly any consensus can be found on what a good master's thesis looks like.
- The process of writing a master's thesis appears to be multifunctional: from the student's perspective it might be a learning process, as well as a working process, and an examination.
- It's unclear what a student is allowed to learn, what the student should learn, what the student should do, and what he/she should demonstrate?
- Tutors attribute problems mainly to the writers' incompetence or to the students' personal problems.
- Writers complain about insufficient guidance and about the tasks and requirements being vague.

Interaction between student writers and supervisors offers an opportunity to clarify good procedures to fulfil several parts of the task, goal and function of activities within the task, and the criteria used in the evaluation of the process and the product. The presupposition in this study is that form and content of the interaction may influence the efficiency of the writing process of the student since this interaction might lead, in a less or more efficient way, to (1) less or more shared cognition about the task and (2) less or more adequate support to the student.

Some conferences between students and supervisors have been audiotaped in order to explore the viability of using research material like this. Global analyses lead to the following conclusions:

- audiotapes generate relevant information: they demonstrate how students and supervisors communicate; how they treat this kind of conversational situations;
- conversations can be analysed quantitatively as well as qualitatively;
- quantitative analyses give general impressions; interpretations are not yet possible, unless one is able to compare the data with a standard or with other data;
- to observe patterns in the interaction, more detailed analyses are needed;
- in the data yet two patterns could be observed: (1) Sp¹ raises a problem. gives explanations, St listens, and (2) St raises a problem, Sp asks a question / gives a small assignment, St tries to solve the problem, Sp evaluates the solution en gives some clues;
- based on these differences, ideas can be developed on how 'thesis interaction' 'works': different patterns of interaction lead to different activities of the actors and for that reason to more or less visibility of the knowledge, opinions, attitudes and abilities of the student;
- the actors involved tend to overestimate the effect of the interaction: the risk of misunderstandings is higher than the actors appear to acknowledge.

3 Main Study: questions and methods

3.1 Research questions

The global analyses of the conferences in the pilot study yielded new insights. This is why we decided to continue this track in the main study. In this study, the interaction between student writers and supervisors will be examined, as it takes place in real life. Its main goal is to generate detailed and precise descriptions of what is

¹ Sp refers to the Supervisor; St refers to the Student.

going on in thesis interaction that might explain why academic writing processes like these, are less or more efficient. This will be achieved by analysing a number of cases. The central question in this study is:

In what way might which interaction patterns in thesis conferences threaten or advance the efficiency of the thesis process?

Presuppositions which render relevance to this question are:

- The interaction between student and supervisor may be important in clarifying the student's task.
- The fact that uncertainty and misunderstanding exist, indicates that the interaction does not fulfil its function in an optimal way.
- If obscurity and misunderstanding arise in the interaction, or if they are not coped with adequately, the risk of an inefficient process increases.
- The interaction may be optimised.

The research questions are:

- 1 What forms and contents of thesis conferences are there? (description)
- 2 What are the main similarities and differences within and between these conferences? (comparison)
- 3 Why do the actors act as they do? (explanation)
- 4 Which actions seem to have a positive effect? Which actions have a negative effect on the efficiency? (evaluation)
- 5 What causes these effects? (explanation)
- 6 How could the conferences be improved? (prediction)

In several aspects the interaction under study, differs from interaction studied before. No empirical models have been found so far describing face-to-face dyadic communication in higher education concerning a task as complex as writing a thesis. This task, after all, covers the development of a research plan, the gathering and analysis of research data, and the presentation in a written text. Another characteristic is that the communication does not take place on the job, but afterwards. Consequently, direct observation of the strategies used by the student are not possible. Information about the student's work, experiences, abilities, thoughts and so on, will have to be inferred from oral reports and written products delivered by the student. Finally, students have to solve several problems for which 'model solutions' (algorithms) are not available.

For these reasons, it would be risky to predict which aspects of the communication will influence the efficiency, and to select relevant aspects in advance. That is why the interaction has been described in a more open way. Based on these descriptions, ideas have been developed on perspectives suitable for more detailed analyses. This reveals an understanding of the 'location' and form of (potential) problems. Moreover, the institutional context becomes visible, which, among other factors, generates the constraints within which the communication takes place. These constraints should be taken into account when postulating opportunities for optimising the interaction.

3.2 Research data

Four cases have been explored. They can be typified as follows:

	1	2	3	4
Discipline	Social Sciences (SS)	Law Studies (LS)	Science Education (SE)	Liberal Arts (LA)
Age supervisor	25-35	45-55	30-40	50-60
Gender supervisor	F	M	F	F
Gender student	F	F	M	F
Stage thesis process	First start	Start	Halfway (advanced)	Final
Experience supervisors with thesis supervision	Little experience	Much experience	Some experience	Much experience
Level student (estimated by supervisor)	Good	Good	Adequate	Excellent
All cases				
Participation	Voluntary			
Characteristics of supervisors	Involved with as well as interested in problems with academic writing. Consider their teaching task as an important one. Very friendly for students. Are unafraid of being observed.			

The following data were gathered:

1	2	3	4
SS: Social Sciences	LS: Law Studies	SE: Science Education	LA: Liberal Arts
- Conference 1	- Conference 1	- Conference 1	- Conference 1
- Interview with St	- Interview with St	- Interview with St	- Interview with St
- Interview with Sp	- Interview with Sp	- Interview with Sp	- Interview with Sp
- Conference 2	- Conference 2	- Conference 2	- Conference 2
- Interview with St	- Interview with St	- Interview with St	- Interview with St
- Interview with Sp	- Interview with Sp	- Interview with Sp	- Interview with Sp after the
- Conference 3		- Interview met Sp after the	thesis had been finished
- Interview with Sp after the		thesis had been finished	
thesis had been finished			

3.3 Processing of the research data

The conferences have been transcribed literally. Mistakes, repetitions, unfinished sentences, bad grammar and so on, have not been corrected. However, paralinguistic features such as pitch and volume, have not been reported in the transcriptions. Neither has overlap in turn taking sequences been presented in a vertical (simultaneous) way. Moreover, for further analysis, turns have been deleted from the transcripts which just consist of a continuer like *hum (hum)*, *yeah* or *okay*. Generally spoken, more than half of the turns are turns of that kind.

3.4 Analyses of the research data

All of the nine audiotaped conferences have been partitioned into scenes and sub scenes. This division is based on the content of the conversation. Every (sub) scene has been described in terms of the (sub) topic, whether or not this topic had been put on the agenda, and in terms of the turns in which the scene begins and ends. Furthermore, all (sub) scenes have been summarised into a 'scenario', which describes:

- the person who does/ says something (the actor: St of Sp);
- the kind of speech acts performed by the actor (e.g. ask, explain, propose);
- the content of the utterance (what the utterance is about).

The main part of this study, however, consists of a detailed description of selected passages from the conferences. Based on the first analyses, fragments have been selected which are relevant in that they may help to answer the research question because they shed light on how efficiency can be threatened or stimulated. The second criterion for selection was that the excerpts should not be idiosyncratic to that case. The selections from the nine conferences can be characterised as follows:

- striking examples of less or more shared cognition;
- striking examples of less more proper guidance for the student;
- striking patterns in dealing with problems;
- striking patterns in dealing with disagreement.

These excerpts are described, explained (for as far as possible) and evaluated. The following principles from the field of Conversation Analysis have guided the descriptions:

- utterances have been described all parts of sequences of utterances;
- speakers' actions rather than their intentions, have been described;
- features of the speakers and the institutional setting are not treated as meaningful unless speakers explicitly refer to these properties;
- interaction is perceived as a phenomenon that is created by both speakers;
- context and interaction are reciprocally related to each other: the context influences the interaction, while interaction creates the context.

Explanations have been explored in several ways,. Each type of explanations has its weaknesses, therefore combinations of explanations have been explored: explorations on the basis of intentions expressed by the actors, of observable causal relationships, of contextual features, of theoretical notions and of knowledge derived from our experiences at the Writing Centre of the Utrecht University.

An evaluation of the interaction was, in the first place, based on the empirical data collected in this study. These data do not always give clear indications, for example when the actual effect lies beyond the scope of the audiotaped data. Since no empirically based normative models are available, we induced a model from the data. Presuming that the behaviour is functional, which presuppositions underlie this functionality? Secondly: are the presuppositions plausible and consistent with regard to the expressed intentions of the speakers and the characteristics of the task and the task environment. Explanations, hence, return as a construct in the evaluations.

Apart from these qualitative analyses, some aspects of the data were analysed in a more quantitative way. Of all 225 (sub) scenes two aspects were described - which I will explain afterwards:

- 1 the amount of words dedicated to the different aspects of the research process, the writing process and the organisation of the process;
- 2 the way in which, and the extent to which, actors are dominant in the conversation.

1 The attention paid to different aspects of making a thesis, was compared to a model which represents expectations about stages of the process in which those aspects will be discussed more or less extensively. Roughly spoken, this model predicts that at the start of the process, the structure of the study (the research plan) will be the 'hot topic'. Subsequently, the implementation of the gathering and analysis of the research data will get more attention. From halfway on, the writing aspects will be discussed more extensively.

Each conference represents a particular stage and can be compared to the model.

2 Dominance in the conversation has been measured by the following variables:

- the influence of speakers on the agenda setting (structuring);
- the extent to which both speakers introduce new (sub) topics (structuring);
- the way in which both speakers introduce new (sub) topics (adding less or more content into the introduction of the topic);
- the balance of the amount of words spoken by the student and that spoken by the supervisor (distribution of speaking time).

For every case, global characterisations of the structuring and the distribution of speaking time, were calculated. Deviations of particular scenes and/or conferences are explained tentatively. Subsequently, all descriptions and explanations, were compared to each other. Some relationships were described statistically. One specific kind of scene has been described in a more detailed way: scenes in which the student's text is being discussed point by point.

4 Case 1: Social Sciences

The student has just started the thesis, which will be based on a literature study. After finishing this thesis, the student will participate in an empirical study by a PhD student, who has offered the research subject and a number of research papers. In conference 1, the supervisor (who is not the PhD student) asks the student about potentially interesting research topics to be found in the papers. They select a provisional topic: the effect of using 'emotional words' on the well-being of people with a chronic disease. The supervisor proposes some next steps to the student. In conference 2, the student appears to have looked at some theses of fellow students. She has tried to formulate some research questions and has started writing her *Introduction*. These activities have evoked several questions which the student raises in the course of the conversation. She asks about the length of the thesis, about the layout of her references, and about how to structure the information into the written text. Conference 3 starts with the problems the student has faced in her search for more literature. Student and supervisor go on discussing the student's text in a global way. The main criticism expressed by the supervisor concerns the absence of information on how and why the expression of emotions influences the well-being of the patient.

In the end, the supervisor is not fully content with the quality of the students' thesis. Particularly the level of gathering and processing the information found in the literature is fairly mediocre, according to the supervisor. These aspects of the tasks have been discussed thoroughly during the conferences, but the interaction has apparently not had the effects which the supervisor had in mind. Analysis of the conversation indicates that this ineffectiveness is not completely surprising. The student might be rather open in expressing her questions and doubts, but it is not clearly perceptible how she processes the suggestions the supervisor gives. To a majority of the proposals and advices, the student does not respond explicitly in a way which implicates acknowledgement of the advice. On the contrary, the student changes the subject, reacts on a detail embedded in the proposal, or repeats what she has done up till that moment. Furthermore, she repeats her questions and problems, even when the supervisor has demonstrated compassion, has asked for more background information on the problem, and has offered practicable solutions.

The data indicate that the interaction is insufficiently effective. Not observable, however, is what exactly is going on in this conversation. Neither the student nor the supervisor explicitly refers to the fact that shared acknowledgement, understanding and agreement cannot be perceived in the interaction. At a certain point, the supervisor exchanges her strategy of explaining for a strategy of showing an example. Also, she switches to solving a problem in collaboration with the student. However, the final results (i.e. the thesis itself) show that the student has not been able and/or willing to adopt the suggestions offered by the supervisor.

The crux here is that the interaction does not suggest full understanding and acceptance by the student, but, at the same time, it remains unclear why the interaction is not successful. We cannot observe what the student's actual responses to the advices are. Presumably, this is one of the causes of an inefficient guidance of the thesis writing process.

5 Case 2: Law Studies

The student in this case investigates whether or not a foreign law (to be called: *Law X*), would be in accordance with the right to privacy as statutory in the Netherlands. A few months before conference 1, the student and the supervisor have talked about the research subject. The student should have written the first chapter of her thesis, but she didn't manage to do so. The student has read more and more books and papers on the right to privacy. However she could not cope with the information, since she has been unable to determine which information to select and how to incorporate that into her argument. This is the problem the supervisor intends to solve during conversation 1.

Both in conference 1, and in conference 2, the issue is being addressed of what to find out about the right of privacy. In conference 1, the supervisor tries to convince the student that it will be sufficient if the student shows that this right would be threatened by a law like *Law X*. The student thinks she should, above that, find out how severe this violation would be, but the supervisor repeats this is not necessary.

The analyses of the conversation show that the student and the supervisor communicate from a different perspective. The supervisor's frame is that of the delineation of the main research question, while the student is occupied with the problem of what elements are required for answering that question. This difference is not discussed by the speakers. In conference 2, the conversation on this issue, develops in a different way. The student initiates the subject, saying that she still thinks she should examine the right to privacy more thoroughly. This indicates that the problem which the student has mentioned in conference 1 still exists. In contrast to his behaviour in conference 1, the supervisor talks along with the student's issue i.e. the strategy to be followed in answering the main research question. The supervisor infers the student should indeed discuss the 'nature' and the 'extent' of the violation of the right on privacy involved in *Law X*. In this interaction pattern, the ideas of the supervisor align with the student's perspective. Consequently, the solutions offered by the supervisor match the problems raised by the student. The difference between the interaction in conference 1 and that in conference 2, confirms the importance of shared perspectives for an efficient problem solving process when discussing a master's thesis.

A second issue that is bothering the student, is how to describe the legal frame for examining *Law X*. She fears her description will become "too long". The supervisor explains several times how the student can handle this problem, but in conference 2 the student's text appears to be not fully in line with the expectations of the supervisor. The text, however, is consistent with the instructions once given by the supervisor. The student's description of the frame of examination corresponds with at least one of the suggestions, the supervisor has offered in conference 1. Consequently, the supervisor's instruction has not been optimal.

The last issue that was analysed, is a difference of opinion about how to treat the goals in *Law X* in the examination. The supervisor thinks this should be done step by step. The student should determine for every goal of *Law X* separately, whether it can be reached, whether better alternatives are available to reach that goal ('subsidiarity'), and whether the violation of the right to privacy is in proportion to every goal. Several times, the student mentions the problem that specific information on every particular goal is not available. In response, the supervisor emphasizes the differences between the goals: this is why the effectiveness, the subsidiarity and the proportionality will not be equal for every goal. The solutions, however, to the problem the student raises, do not contain specific 'action knowledge'. According to the supervisor, the student should consider the information available, with "*critical distance*", build a "*logical argument*", and "*establish criticism to a high degree*". These advices do not seem to convince the student, for she repeats her problem three times. In the end, the student remains in doubt, yet hoping that things will get clearer when actually elaborating the examination of *Law X*.

6 Case 3: Science Education

A final project in the Science Education course takes one year. The student in this case has started his project nine months ago. He is about to carry out some empirical experiments in a high school. In these experiments, the student wants to explore whether high school students are able to use a risk assessment procedure for reflecting upon the risks involved in taking substances like for example vitamin A or alcohol.

An external expert will read the student's text and give advice about the research plan. For that reason, this introductory text is discussed extensively during conference 1. Besides the student's design of the experiment itself is an important issue. In conference 2 the speakers discuss, both (once again) the design of the experiment and how to characterise the main research question. According to the supervisor the aim of the study is to develop and test a design of science education in high school.

In this case, much more 'metacommunication' can be observed than in the other cases. The student plays an active role as 'metacommunicator': he asks for explanations, offers paraphrases, writes down the supervisor's proposals, and checks his interpretations of the supervisor's messages. In this way, he frequently elicits complementary and more specific information from his supervisor. The amount of shared cognition is made visible. Nevertheless, the data show that reaching clarity can be a difficult and time-consuming process. Impeding factors, in this respect, appear to be: (1) sticking too long to (synonyms of) concepts or words which are inadequate representations of the intended denotation, (2) leaving the central point of the conversation, and (3) using language in an inconsistent and obscure manner.

The second issue which I examined is the way in which the supervisor guides the student towards a proper written text. The student's writing process is rather problematic: writing a hard job for him, and the supervisor is not satisfied with the quality of the student's texts. His writing experience does not go beyond writing lab reports, which have a standard form and are easy to apply over and over again. It is remarkable that the supervisor, in the conversation, points at what is wrong in the text and at how these problems can be solved, while the student initiates issues like the communicative goals of different parts of the text and/or the criteria being used to evaluate the text. The solutions the supervisor proposes are very detailed. She even reformulates sentences for him. In what she says, however, the supervisor offers a lot of 'room' to the student to make his own decisions. This type of interaction shows an important dilemma in discussing theses: the supervisor wants to give autonomy to the student, but at the same time, the supervisor is the 'gatekeeper' who watches over the standard, who might even feel responsible for the quality of the product. Consequently, the supervisor sometimes has to disapprove of the text and, by doing that, deprive the student from the freedom to do it in his own particular (insufficient) way. As a result of this dilemma, the illocutionary dimension of the utterance is ambiguous: should or could the student act upon the supervisor's proposals?

7 Case 4: Liberal Arts

The research of the student in this case consists of a comparison of different mediaeval texts. She wants to find out who the intended readers were of the English, French and Dutch versions of a particular mediaeval text. The student has been puzzling over how to answer this question, and she is about to solve this problem. Her *Introduction* is discussed in conference 1, her chapter 3 in conference 2.

Two main problems have been mentioned in the interviews by both the student and the supervisor. These problems can be traced in the conferences. In the first place, despite mutual respect and sympathy, a lot of 'struggle' and dispute goes on between the student and the supervisor, and neither of them is easy to convince. Secondly, a problem concerning the content is being acknowledged by both speakers: the student is inclined to consider the mediaeval texts from a contemporary perspective, which they refer to as 'anachronistic' thinking. These two problems meet when a dispute arises on an anachronism in the student's text.

In both conferences one of the issues at stake is whether or not to incorporate the so called *Latin tradition* into the comparison. The student considers this will not be necessary, while the supervisor thinks the Latin versions of the text are interesting too. Only by the end of conference 2 is the supervisor reconciled to the idea of excluding the Latin tradition. Several causes can be inferred from the data as to why this takes so much time: (1) statements are being repeated, (2) at some points no clarity exists on how utterances contribute to the dispute, (3) neither the arguments themselves are being discussed, nor (4) the warrants underlying the reasoning. Moreover, the supervisor's argumentation is not based upon the scope of the central research question. Her arguments why the Latin tradition is interesting are not directly derived from the research goal, as it is described in the student's research question. It is not till the end of conference 2 that the student makes clear that an important presupposition in the supervisors reasoning is untenable. At this moment, the supervisor, indeed, changes her point of view.

Besides, extensive discussions arise about the student's (alleged) anachronisms. Only one of the three discussions on this topic ends in agreement. The discussion that is settled successfully deviates from the other two discussions in several aspects: (1) opinions and positions are made explicit, (2) the discussion remains clear and (3) sticks to one point of difference, (4) the student proposes a solution to the problem which is accepted by the supervisor, (5) explicit references to anachronism are absent and (6) the discussion takes half the time consumed in the other disputes. As was observed in case 3, leaving the central point of the discussion, threatens the efficiency of the conversation: when the discussion of the main point is resumed, several statements and arguments are repeated that had been uttered already.

8 Quantitative analyses of the interaction

8.1 Interaction in Case 1 (SS)

Subjects

Most striking in this case is the frequent discussion of writing aspects as early as conference 2. The student puts this subject on the agenda, rather prominently, by means of the questions she asks. When the supervisor is the initiator in the conversation, more research-related subjects arise.

Dominance

The supervisor opens 61% out of the (sub) scenes and is, in this respect, the dominant structuring actor. In particular, she opens scenes when she wants to hear more on a subject from the student, when they talk about 'what's next', and when the student's text is being discussed. In this way the supervisor presents herself as an inquirer, as a guide for what follows, and as a reviewer of the student's text. The student opens scenes when she (fore)sees problems. Her dominant role in the structuring process of the conversation is the role of a questioner and a problem teller.

In general the supervisor utters more words than the student, but the amount differs in the three conferences. In conference 1, the supervisor's share is 55%, in conference 2 this is 60%, in conference 3 it is 74%. The distribution of the speaking time depends on the subject being discussed. The supervisor relatively talks more on the issues 'What's next' and 'the student's text'. The student talks more when the literature is being discussed, as well as the thesis subject.

8.2 Interaction in Case 2 (LS)

Subjects

The subjects are as expected in the first stage of a thesis process. The speakers predominantly talk about the structure of the research.

Dominance

The supervisor plays the most dominant structuring role, especially in conference 1. He sets the agenda autonomously, and introduces 80% of the subjects. In conference 2, this is 'only' 65%. In conference 2 the student has an equal share in openings when the conversation is about 'what's next' or about what the next chapters will look like. However, openings in scenes on the agenda and on the student's text are exclusively made by the supervisor.

In conference 1 70% of the total amount of words are the supervisor's, in conference 2 his share is 63%. Also in this respect, the supervisor is more dominant in conference 1 than in conference 2. Deviations seem to depend on the subject as well as on the conversational roles. The supervisor talks less about the issue of criminal law, which is likely to be the domain of expertise of the second supervisor. His share increases noticeably when they talk about the agenda, about the student's text, and about what's next. When the supervisor invites the student to talk, she talks more extensively in that scene. Moreover, the student becomes more 'wordy' when she raises a problem that has been discussed before.

8.3 Interaction in Case 3 (SE)

Subjects

The subjects in these conferences are not all as expected in a thesis process of which the greater part is supposed to be completed. In conference 1 more attention is paid to the written presentation of the research plan, than to the implementation of the research. In conference 2 the goal of the study is discussed more extensively than expected.

Dominance

In contrast with the other cases, this student has actual influence on the agenda. He proposes subjects and preferable sequences for handling these subjects, which are accepted by the supervisor.

When it comes to opening patterns, the supervisor is rather dominant in conference 1: 84% of the scenes are being opened by her. In conference 2, the student has a greater share in the openings: a third part of the total amount of scenes. The supervisor opens all of the scenes concerning the student's text and the so-called 'scenario' of the experiment. When the student opens, he either just starts talking about his plans, or he raises new problematic topics in response to utterances of the supervisor.

With respect to the dominance in terms of speaking time, the supervisor in this case is the least dominant. Consequently, the student in this case talks more than his colleagues in the other cases. The supervisor is talking dominantly when discussing the student's text, the scenario, and the risk assessment scheme (only in conference 2). The student exceeds his average amount of words in the discussions on the goals of the experiment, and on the risk assessment scheme (only in conference 1). Furthermore, the student talks more when he opens the scene, and when he is being invited to talk by a supervisor's question.

8.4 Interaction in Case 4 (LA)

Subjects

When talking about the student's text, mostly research-related subjects occur. Particularly, the student's data analyses seem to be discussed as and when they are presented in a full text. This is not unusual in more qualitative types of research.

Dominance

The agenda is set exclusively by the supervisor. The student opens only one out of the 49 scenes involved in the two conferences. As a result, the student's contribution to the structuring of the conversation is marginal.

About one third of the words, is the student's. No remarkable differences exist between the two conferences. Moreover, fewer deviating scenes can be found in this case with respect to the distribution of speaking time. When they occur, they depend on the subject, in particular on the distribution of know-how. The supervisor talks more about translation issues. The student dominates discussions on the specific data: the texts she is studying.

8.5 Comparison of the cases

The actual attention being paid to the different subjects, compared with the expectations for the different stages of the processes, can be described as follows:

- The **research design** is indeed a more important issue in the cases which just have been started (case 1 and case 2). Exceptions occur when the student raises more writing issues (case 1), and when the design needs to be reconsidered halfway through the process (case 3).
- The **implementation of the research** can become an issue in an early stage, when the thesis processes are relatively short (case 1 and case 2), and/or when the method of developing the design is equal to the method of the research itself (i.e. literature study in case 1). Implementation can be important in an advanced stage, when the results of qualitative analyses are not being reported unless in draft chapters (case 4).
- The amount of talking about **writing** increases gradually over the different stages represented in the four cases. Exceptions can be explained in a similar way as I did above: the student prematurely introduces writing issues (case 1), or abundant attention is being paid to design issues (case 3). Finally, when the student is a good writer, the reporting doesn't need to be discussed thoroughly (case 4).
- The attention paid to the **organisation of the conversation** is equal in all cases, though limited to only a few percent of the total amount of words.
- The **organisation of the thesis process**, predominantly, is being discussed in the final scene(s), when the student and the supervisor look ahead at their next meeting.

The way in which the **structure of the conversation** is being established, can be summarised as follows:

- The agenda's only cover the two or three main topics of the conference. Thus, only segments of half an hour (or longer) are being pre-structured by the agenda. Lower level structuring is being established by the opening patterns.
- All supervisors open more scenes than their students. Consequently, all supervisors play a dominant role in introducing topics into the conversation.
- The more advanced the processes are, the more supervisors' openings can be observed.
- Relatively high rates of supervisors' openings can be found when the supervisor is eager to be in control of the conversation (case 2, conference 1), and when the student's text is being discussed (all cases).
- The majority of the openings, for all supervisors, consists of proposals. So, with respect to the content, the supervisors' opening patterns are dominant too.
- When students open a scene, they more often ask a question or raise a problem. These kind of openings include less referential content than openings consisting of a proposal.

Results of the calculations on the **distribution of speaking time**, show that:

- On the average, supervisors utter 67% of the total amount of words.
- Differences in this distribution can be explained from the topic and from other features of the interaction. Speakers talk more when they have specific expertise on the subject, or when they feel responsible for that issue.

Correlations between several features of the interaction have been described statistically (see next paragraph).

8.6 Correlations between interaction variables

In the first place I measured the correlations between the two variables of dominance:

- 1 the correlation between the person who opens the scene and the distribution of the speaking time;
- 2 the correlation between the type of opening and the distribution of the speaking time.

Secondly, correlations have been calculated between the different variables of dominance and the type of the scene (i.e. discussion of the student's text versus other scenes):

- 3 the correlation between the type of the scene and the person who opens the scene;
- 4 the correlation between the type of the scene and the type of opening (i.e. problem, question or proposal);
- 5 the correlation between the type of the scene and the distribution of the speaking time.

The following correlations have been found:

- 30% of the variance within the distribution of speaking time can be explained by a combination of the opener and the opening type. Supervisors talk more (on the average 75% of the words) in scenes which are opened by themselves with a proposal or a problem. Students relatively talk more (about 50%) when the supervisor opens the scene with a question or when they open the scene themselves
- 'Text scenes' are opened significantly more often by the supervisor (95% of the text scenes) than other scenes (64% of the other scenes are being opened by the supervisor). In opening frequencies in text scenes, the supervisor is more dominant.
- Out of the total sum of 225 scenes, 32% is a text scene. This amount has been taken as a standard for exploring the distribution of the three opening types in the two different scenes:
 - Openings by means of a question are significantly less frequent in text scenes (18%) than in other scenes (82%).
 - Openings by means of a problem can be found significantly more often in text scenes (47%) than in other scenes (54%).
 - No significant differences were found in the proposal openings, in proportion to the distribution of text scenes in the corpus: 35% proposal openings occur in the 32% text scenes.
- In text scenes the supervisor talks significantly more (76%), in comparison with the words spoken by the student, than in other scenes (supervisors' share, averagely, 61%).

A specific kind of text scene has been investigated in more detail: scenes in which the student's text is being discussed point by point (clause by clause) as opposed to text scenes which comprise larger parts of the student's text, or even the text as a whole. All utterances in a sample out of these scenes have been analysed, using the MEPA program ². The results are:

- What are the utterances about? A lot of utterances concern problems and solutions, whereas talk about causes (of the problems) appears to be extremely rare. Furthermore, many utterances can be found expressing acknowledgement, acceptance, and the like (consensus).
- Who says what? The supervisors frequently combine problem telling behaviour with problem solving behaviour. Moreover, supervisors initiate, students respond.
- Which patterns are to be found? (Features of) the problem and (features of) the solution appear with a relatively high frequency in one supervisor turn, without any interference whatsoever by the student.

9 Conclusions and final remarks

The central question in this study is: In what way might which interaction patterns in thesis conferences, threaten or advance the efficiency of the thesis process? Reviewing all the data being observed, I infer that the interaction is not always adequate. More than once, things go wrong: misunderstandings rise between students and supervisors, agreement is not always established in an efficient way. This seems to be caused by a combination of unclear language and speakers communicating from different perspectives, i.e. unshared questions, problems, reasoning or knowledge. Several examples demonstrate that actors do not investigate efficiently what exactly goes wrong in the interaction. As a result, confusion continues to exist and the problems faced in the thesis process are not dealt with efficiently.

Explanations

The regular occurrence of misunderstanding and confusion is not surprising. The data clearly show that talking about mater theses is a complex task that requires a high amount of cognitive effort and concentration – on the part of the student as well as the supervisor. The topics themselves are complicated: problems concerning designing, implementing and reporting a scientific research project. Besides, speakers have to deal with unexpected, even surprising, input by the other speaker, and speakers are concerned with defining their roles in the relationship with the other one. In the meantime, the clock keeps ticking. The risk of confusion and miscommunication seems to be inherent to this complex institutional talk, in which the actors are speakers and listeners, but thinkers as well.

More specific reasons can be induced from the data: (1) risks are not being perceived or are being underestimated, (2) speakers think it is not useful to pursue a threat, or (3) speakers lack the ability to clarify and solve the problem properly.

Supervisors appear not to perceive every risk and threat to the efficiency of the interaction. Presumably this is connected with the role they assume in the conversation. The supervisors observed in this study tend to be fo-

² MEPA stands for Multiple Episode Protocol Analysis and has been developed by Dr. G. Erkens, Utrecht University, Department of Social Sciences.

cused on persuading the student. Thus, they are more likely to be concentrated on sending a convincing message than on perceiving the response of the receiver.

This persuasive objective can be seen in the strong beliefs the supervisors show in the discussions. They don't seem to be inclined to reckon with the possibility that the student could have different thoughts or wishes, or that the student perceives a problem from a different point of view.

Furthermore, supervisors overestimate the effectiveness of explanation and instruction. Utterances of that kind are being repeated regularly, even though the data show that the effectiveness does not increase when something is being said for the third or fourth time. Supervisors rarely change an 'explanation mode' into an 'investigation mode' (finding out what's going on). In this kind of persuasive, instructive communication, we see the supervisor playing the role of an expert and assessor (examiner). Even though the supervisors indicate, in the interviews, that they prefer to offer the student some room, freedom and autonomy, at the very moment the student's performance doesn't meet the standard, the supervisors usually respond with strongly directive behaviour.

Students actively contribute to the repetition patterns, in particular by repeating their questions and problems. They rarely break through these patterns. The supervisors' dominance in terms of structuring the conversation and the amount of speaking time probably reflects the less dominant role the student is supposed to play.

Thirdly, misunderstandings are allowed to continue because the speakers don't want to pursue on an issue, for example because the issue is not important enough to put the coherence of the conversation at risk. Also, situations occur in which speakers postpone a problem to a next meeting, so the student will, in the meantime, have the opportunity to work on the problem and concrete results can be discussed.

Finally, speakers may fear clarification because it can be unwanted or difficult to establish clarity. Clarification might be a face threatening activity, and in this way unwanted, since the speakers might be too compelling. As a result of this the hearer's autonomy (*negative face*) would be at risk. Difficulties can arise when answers or solutions stay unclear or when they evoke new difficult problems. This can happen when the speakers lack the ability to communicate clearly, or when supervisors lack explicit knowledge of the (problematic aspects of the) processes the student is engaged in.

Risks and opportunities inherent to the observed patterns

The risk of confusion and unshared cognitions, phenomena which threaten efficiency, increases when (1) important messages are obscure and abstract, (2) important messages are multiple and stratified, and (3) it is not known how the hearer processes the message.

- 1 Suggestions offered by supervisors, which generally are important to the students, may be obscure or abstract, particularly if the exact propositional knowledge is not familiar to the student, or if concepts can refer to different types of action knowledge. Optimism is a real danger: students and supervisors ought to take into account that the possible abstractness and vagueness of concepts may frustrate applying those concepts in real thesis life. The student's work can be supported by actual information on (vivid examples of) criteria, goals, and strategies applicable in the thesis writing process.
- 2 Multiple messages bear the risk of not completely being processed by the hearer. In some cases the information just seems too voluminous to grasp it all. In other cases, we see that the hearer misses some elements of the message because he is thinking through a previous element. If a speaker left more (short) pauses in between the elements of his message, this would provide the hearer with more processing time, while, concurrently, the speaker can observe, or even illicit, the listener's response.
- 3 Action proposals suggested by the supervisors more than once appear to be misunderstood by the students. Several examples have been found of the effectiveness of asking for a 'display of understanding'. Students explain how they interpret a message and supervisors use the opportunity to acknowledge or correct the students' displays. If a new problem arises speakers can decide whether to solve it on the spot (taking the risk of losing the central issue), or to return to the problem later on. The latter option is very rare in the data.

Apart from this situation in which risks are present but problems not yet directly perceptible, I estimated the risks and opportunities of different interaction patterns observed when misunderstanding, confusion or disagreement actually arise in the conferences. These features can be described as follows:

Chances of success attributed to different responses of supervisors to student problems

Gain of time in the short term	Preservation of a coherent conversation	Solution of the problem in the short term	Solution of the problem in the long term
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1. Neglecting	++	++	--	--
2. Offering an answer or a solution	+	+/-	++	-
3. Postponing the problem	+	+	+/-	-
4. Asking questions	-	-	+	+
5. Solving or analysing the problem collaboratively	--	-	+	++

++ = very high chances; + = high chances; +/- average chances; - low chances; -- very low chances.

- 1 By neglecting the problem, speakers may gain time and maintain the coherence of the conversation on condition that the other person doesn't keep thinking about the problem and that it concerns a minor problem. All in all this strategy seems rather hazardous.
- 2 Offering an answer or a solution can be efficient, provided that the answer or the solution is an adequate one. When the response of the hearer indicates the contrary, it appears to be useless to repeat the message over and over again. When an answer or a solution actually is adequate, this specific problem can be solved. A supervisor elaborating his problem solving strategy, thus modelling academic thinking in the discipline, will be more likely to provoke an effect in the longer term, although the data show counterexamples in which the students do not (or cannot) follow the cognitive processes demonstrated by the supervisor.
- 3 Postponing the problem to a later moment in the conference offers the opportunity to both maintain coherence and deal with the problems one by one. Postponing a problem to a next meeting is usually combined with an assignment for the student to try to tackle the problem. This can be highly profitable because the student's work generally yields more specific information (e.g. a written text) which provides a more solid basis for sharpened observations and analyses of the particular features of the problem. Efficiency, though, can be threatened if the assignment is too broad or too large, or when the student has no clear conception on how to fulfil the assignment. In circumstances like these the student might be working too long in the wrong way or direction.
- 4 The result of clarification of a problem by means of asking questions will be that the supervisor gets a 'listening position' whereas the student gets a 'telling position' (cf. 8.6). This can result in a clearer view of the students' ideas, intentions and experience, which provides a more solid basis for responses and guidance. It appears to be hazardous to ask those questions on minor details, since the coherence of the conversation may get lost. Moreover, the use of 'open' questions (what.. ? how ...? etc.) is more efficient than asking questions that can be answered by a *yes* or *no*. A third condition for a positive effect of clarifying questions, is that the other speaker is taking and is given enough time to answer them. This condition particularly concerns answering time for the student: the data very clearly show that it is difficult for the students to express their thoughts clearly and fluently. Finally, the supervisor must be able to evaluate the student's answers in a proper way, preferably in terms of good and poor conceptions of the thesis process.
- 5 Solving the problem together can be rather time-consuming but very effective as well (and thus, in the end, efficient too). The supervisor can observe how the student thinks and acts, and will receive the information necessary for an accurate guidance of the process. Collaboration, more specifically, can be profitable (1) if aspects are difficult to be communicated because of their abstract nature, (2) if it concerns a major problem which will return during the thesis process unless it is solved properly, and/or (3) if the students do not manage to get to work with a certain task. In the cases examined in this study, collaboration occurs (and is being marked as such by the supervisors), but the supervisors appear to be uttering about three quarters of the words in those scenes. In actual practice collaboration tends to become modelling.

Some additional ways of improving the efficiency of student-supervisor interaction may be considered. These ways go beyond the scope of the actual talk going on in thesis conferences. If supervisors, in preparing a conference, were to consider more extensively the potential causes of problems, it is more likely they would take more time, during the conference, to clarify and explain problems – which would provide them with more specific information to build their supervision on. A risk observed in the data, is that supervisors do not question their interpretation, even though the actual interaction indicates that it is a misinterpretation.

Secondly, materialisation of the conference seems useful, in particular by a student taking notes and making a report of the conference. Case 3 shows that taking notes is a natural way for segmentation of the conversation (cf. pauses). Moreover, a report can be considered as a display of understanding – which the supervisor can acknowledge or correct. Finally, the collection of the student's reports will become an archive in which one can look up whether or not an issue has been discussed before (efficiency).

The examiner's role of the supervisor can impede the efficiency because of the strong orientation this seems to generate upon persuasion and features of the product (the written text). It would be interesting to consider alternative interaction modes in which a 'tutor' is not the examiner.

Finally: the data suggest that the efficiency of the interaction could be increased when students as well as supervisors could talk on the basis of a shared frame of reference. This frame should present coherently inter-related knowledge on scholarly research and writing processes. A shared frame like that could improve the problem solving processes in master's thesis conferences.