Abstraction and authority in textbooks

The textual paths towards specialized language

BY

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Abstract

During a few hours of a school day, a student might read textbook texts which are highly diversified in terms of abstraction. Abstraction is a central feature of specialized language and the transition from everyday language to specialized language is one of the most important things formal education can offer students. That transition is the focus of this thesis.

This study introduces a new three-graded classification of abstraction including the levels of specificity, generalization and abstraction, based on a discussion of the concept of abstraction. The investigations performed, based on this classification, show that texts from different subject areas display distinct patterns of abstraction. The Swedish literary texts had the lowest degree of abstraction, the social science texts had an intermediate degree and the natural science texts were the most generalized and abstract. The results also show that the degree of abstraction in the textbook texts increases in later grade levels.

The thesis presents a new way of analyzing shifts between levels of abstraction and their functions. Interestingly, the texts with a medium degree of abstraction, the social science texts, are the ones with the greatest variety in shifts. The functions of the shifts differ with respect to cultural domains. The shifts in the Swedish literary texts in general belong to the everyday domain while the shifts in the natural science texts belong to a specialized domain. The shifts in the social science texts had features of both domains.

A secondary aim of the thesis is to develop the understanding of the relationship between author and reader in the texts. The results from my investigation of modality in the Swedish textbook texts confirm the earlier findings from English and Spanish textbooks. In comparison to other text types, textbook texts present knowledge in a more authoritative and less modalized way.

From time to time, abstraction is described as a feature that hinders students accessing texts. Some researchers even suggest a removal of features of specialized language in textbook texts, in order to increase students’ understanding. However, in a society where specialized knowledge is necessary, the access to specialized texts is important. A democratic view of education and school mandates that children and adolescents have the opportunity to encounter and learn to encounter specialized language in school. In analyzing the texts special attention is paid to the relationship between the texts, the contexts of use and the student readers.

Keywords: textbook research, text linguistics, content area reading, reader text relationship, literacy education, systemic linguistics, applied linguistics

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Agnes Edling
CHAPTER 1
Introduction

One of the most important things formal education can offer is the transition from everyday knowledge to specialized knowledge in different subject areas. In this transition the world is reinterpreted. This is the transition where cats are no longer seen as pets but as mammals, history is not about specific kings and queens but about political changes, and the world is not crowded with people and things but with materia and atoms. The aim of the work presented in this thesis is to portray this transition, with the focus on abstraction in textbook texts from three grade levels and in three different subject areas.

As an illustration of this transition, a history text from grade 5 and a civics text from grade 11, are shown below. The text from grade 5, written for 11-year-old readers, is about Albania:

But this was not the case in Albania where everything remained the same. It was because of a man named Enver Hoxha. He seized power in 1944, made himself dictator and ruled the country during 40 years. Only one party was allowed, the Communist party. The party decided everything, even where people should live. Hoxha prohibited all religions. (Nordling et al., 1996a:135)

The focus in this text is on a specific person, Enver Hoxha, and his deeds. Even though this is a historical person and part of the history textbook to illustrate the larger phenomenon of Albania’s history, Hoxha is described in an everyday way as making decisions and having aims. As a specific person he is situated in time and place.

---

1 Between the ages of 7-16 years all children must attend school in Sweden. After nine years of compulsory school, students have the choice to continue formal education at the upper secondary school during usually three years. In this thesis I refer to the nine years of compulsory school, and the three years of upper secondary school, as grade levels 1-12.

2 In order to make the reading easier, the English translations of the textbook extracts are used in the text. The corresponding Swedish originals can be found in footnotes. Naturally, the analysis has been made on the Swedish texts. In general, the translation to English has not affected the analysis of abstraction.

3 "Men så var det inte i Albanien, där stod allt stilla. Det berodde på en man som hette Enver Hoxha. Han grep makten 1944, gjorde sig till diktator och styrde sedan landet i 40 år. Endast ett parti var tillåtet, kommunistpartiet. Partiet bestämede allt, t.o.m. var man skulle bo. Hoxha förbjöd alla religioner." (Nordling et al., 1996a:135)
The central theme in the social science text from grade 11, intended for 17-year-old readers, is the concept of democracy:

All countries wanting to define themselves as democracies must follow some simple rules:

- Regular political elections and free party formation: Democracy requires that political elections are held regularly and that there is a choice of at least two parties.
- Common and equal right to vote: No citizen above a certain age may be prohibited from voting on the basis of sex, ethnic group, income or religion. Equal right to vote is understood to mean that all votes have the same value.
- Election secrecy: Nobody should have to reveal what party or candidate he or she is voting for.
- Free influence of public opinion: Everybody has the right to express an opinion.
- The principle of majority: The proposal of the majority shall defeat the proposal of the minority.
- Law and order: Nobody must be punished without legal cause. Lawlessness and arbitrary sentences must not occur in a democratic country. (Bengtsson, 2000:110-111)

What is salient in this text is the focus on abstract phenomena, e.g. party formation and right to vote. There is no other general theme in the extract but the loosely connected and abstract theme of democracy. The reference to groups of objects and things are highly generalized as citizen, and majority. The text is not situated, neither in time, nor in space.

There are several obvious differences between these two texts. One of these differences lies in the degree of abstraction.

We live in a society where diversified and specialized knowledge is necessary for us in many everyday situations. When we have to file an income tax return, when the car is broken, when reading the editorial in the newspaper, we depend on specialized knowledge. Accessing specialized knowledge content and accessing the grammatical forms of the written medium are intrinsically linked. A democratic view of education and school mandates that children and adolescents have the opportunity to encounter and learn to encounter specialized language in school.

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4 "Alla länder som vill kalla sig demokratiska måste följa några enkla regler:
· Regelbundna politiska val och fri partibildning: Demokratin kräver att politiska val hålls regelbundet och att det finns minst två partier att välja bland.
· Allmän och lika rösträtt: Ingen medborgare över en viss ålder får hindras från att rösta på grund av kön, ras, inkomst eller religion. Lika rösträtt innebär att alla har en röst var.
· Valhemlighet: Ingen ska behöva avslöja vilket parti eller vilken kandidat han eller hon röstar på.
· Fri opinionsbildning: Alla ska få uttrycka sin åsikt.
· Majoritetsprincipen: Majoritetens förslag ska vinna över minoriteten.
The texts students encounter in school are in themselves important in the sense that they constitute a dominant part of the students' textual way towards an adult specialized literacy. Both the texts in themselves, and the classroom activities as models of how to deal with texts, are important from this perspective. Different subjects have their specific expectations regarding how to present the world. Abstraction is an important feature of these expectations in many subjects.

1.1 Why abstraction in textbook texts?

There are several reasons to address the importance of a study of abstraction in textbook texts, both pedagogical and text linguistic ones.

The conceptual development of children is traditionally described as moving from the concrete to the abstract. This is seen as a movement from early stages where intellectual operations are based on concrete objects as referents to later stages where the referents of the intellectual operations are more abstract (e.g. Gentner & Boroditsky, 2001:244, Vygotsky 1986:110, Langer, 2001:29). Learning how to move from something concrete to something abstract is an essential skill that takes place within the framework of formal education. It is probable that this conceptual movement is noticeable in the texts from different grade levels.

In an educational context abstraction is sometimes put forward as a feature which hinders students’ access to texts. Texts are regarded as difficult because they are abstract. In an experimental study Sadoski, Goetz and Rodriguez (2000) investigate the effects of concreteness on comprehension, interestingness, and engagement in what they label as four different text types (persuasion, exposition, literary stories and narratives). The results of the study showed better recall for concrete texts than for abstract ones. A possible answer to this, and similar results, could be to recommend textbook authors to write concrete texts. An interesting discussion, however, is whether students benefit in the longer term from encountering only adapted texts.

From a text-linguistic perspective there are other reasons for a study of abstraction in textbooks. First and foremost, abstraction has been described in single text types. Few studies compare the abstraction in different text types. As mentioned earlier, this thesis describes patterns of abstraction in Swedish literary texts, social science texts and natural science texts in three grade levels and contributes in this way to the research in the area.

Abstraction is often presented as a stable feature of texts; texts are described as being either abstract or concrete. A closer look at texts shows that almost all texts have both more concrete and more abstract parts. In texts, the focus shifts from more abstract to more concrete referents, and vice versa. An interesting object of study is then the shifts between different degrees of abstraction and the function these shifts have in the text context.
Abstraction in texts is often described as one of many features of a text (e.g. Biber, 1991; Veel & Coffin, 1996). Few studies have focused on abstraction and discussed a definition of abstraction in detail. An interesting issue is for instance if abstraction is a feature of a word or of its reference in a given situation. I am inclined to opt for the second alternative.

1.2 Aims

The focus of this thesis is on the transition from everyday language to specialized language with special attention paid to abstraction. The central aim of the work is to develop the understanding of this transition through a study of abstraction and related textual features in textbook texts from three different grade levels (grades 5 and 8 in compulsory school and grade 11 in upper secondary school) and three different subject areas (Swedish literature, social science and natural science5). The work presented in this text is on a methodological level an attempt to develop ways of describing abstraction, in the text as a whole as well as the shifts of abstraction within texts.

In addition to the investigation of abstraction, a secondary aim is to develop the understanding of the relationship between author and reader in the textbook texts through an analysis of mood and modality in these texts.

An overall ambition in the work is to connect the analysis of the texts to the contexts of use, i.e. the text activities in the classroom, and the student readers.

1.3 The organization of the thesis

Within the process of thesis writing there are more and less procedural sections. The second chapter often concerns the theoretical background. Even though there is a chapter 2 in this thesis as well, it is rather short and discusses some of the general theoretical framework that has influenced the work presented in later chapters. In general, I have chosen to present and discuss earlier research in connection to the relevant chapters in the text.

The work presented in the text to a certain extent is both inspired and restricted in its aims and organization by a larger project, Students’ encounters with different texts in school; a considerable part of chapter 3 is about general methods and data collection from this project.

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5 I have consistently chosen to refer to chemistry, physics and biology as natural science in order to distinguish them from social science.

6 The project Students’ encounters with different texts in school was financed by the Bank of Sweden Tercentenary Foundation (1999-2003, prolonged to 2006). The project has been coordinated by Professor Caroline Liberg. Collaborators in the project are Åsa af Geijerstam,
Chapters 4, 5 and 6 are about abstraction in textbook texts. Chapter 4 includes a discussion of earlier research and fundamental aspects of abstraction in general. At the end of the chapter a definition of abstraction, grammatical metaphor and technicality is reached. Chapter 5 starts out from this definition and presents the results from investigations of abstraction in Swedish textbook texts from grades 5, 8 and 11, and from the subject areas of Swedish literature, social science and natural science. Chapter 6 is an attempt to explore new ways of analyzing abstraction by examining the shifts between abstraction levels and their function, and a new classification of the texts based on their degree of abstraction, instead of the earlier classification based on subject area.

Chapter 7 presents an investigation focused on the relationship between author and reader in the textbook texts with special weight put on the mood and modality in these texts.

The textbook texts in the study were gathered from situated classroom activities where they were part of the students’ reading assignment. Chapter 8 describes these activities in the classroom from the perspective of dialogicality. Chapter 9 concerns the students’ reading of the previously analyzed texts from the concept of text movability. In chapter 9 I have also tried to bring together the different aspect of analysis.

The final chapter 10 discusses the results from earlier chapters and different perspectives on abstraction in textbook texts and the consequences of these perspectives.

Jenny Folkeryd and Agnes Edling. The results from the project will also be presented in the forthcoming theses by Åsa af Geijerstam and Jenny Wiksten Folkeryd.
CHAPTER 2
Background and theoretical landmarks

This chapter will discuss some of the general theoretical framework that has influenced this thesis. As mentioned above, relevant theory as well as methods will be described in the chapters where they are of importance.

For the work presented in this text there are three main theoretical standpoints which all emphasize the relationship between language usage and the situation in which it occurs. These points of departure are:

- language as realization of the social context (a social-semiotic perspective, especially the framework of systemic functional linguistics)
- language use as part of practices (a socio-cultural perspective)
- language as ideology (a critical discourse perspective)

This chapter will be organized around these standpoints. The points of departure are seen as general to all language use within the theoretical frameworks in question. In my description of them I will focus on the language of schooling in the examples.

The three points of departure mentioned, i.e. the framework of systemic functional linguistics, a socio-cultural perspective on learning and the critical discourse analysis are not incompatible. On the contrary, in comparison to many other perspectives on language and learning they are quite easily combined, as they partly intersect. The main difference between these perspectives is rather what they choose to focus on. The framework of systemic functional linguistics focuses on language as a realization of the social context, the socio-cultural perspective on the practice and language as a part of the practice and the critical discourse analysis on the ideological content of the linguistic expression.

2.1 Language as realization of social context

The model of language known as systemic functional linguistics (SFL) was outlined by M.A.K. Halliday and has evolved especially in Australia since 1975. The central focus is on showing how the organization of language is
related to its use (Martin, 1997:4). One of the motives for choosing the framework of SFL as an analytical entry point to the textbook texts has to do with the fact that much work on the language of schooling is done within this framework. Since the mid-eighties the texts of educational settings have been studied with special interest by central researchers within the SFL framework. Especially important to this area of SFL is the work by J.R. Martin and his colleagues at the University of Sydney and their collaboration with the Metropolitan East Disadvantages Schools Program within the New South Wales Department of School Education.

Within the framework of SFL, both language and social context are seen as semiotic systems in a relationship of realization. Social context is in this way regarded as comprising language patterns. “Realization also entails that language construes, and is construed by and (over time) reconstrues social context” (Martin, 1997:4). The relationship between language and social context can be outlined as in figure 1.

![Figure 1. Language as the realization of social context (from Martin, 1997:4)](image)

Within the SFL framework, the organization of social context and of language is functionally diversified along similar lines. The functional diversification of language is described through three metafunctions:

- ideational – the linguistic resources are about representation
- interpersonal – the linguistics resources are about interaction
- textual – the linguistic resources are about information flow
The related functional diversification of social context has the variables of:

- field – concerns the institutional practices
- tenor – focuses on the social relations
- mode – is about the channel

Different contexts are characterized by differences in field, tenor and mode and realized in language in the ideational, interpersonal, and textual resources of grammar (Schleppegrell, 2004:75). Building on figure 1, the diversification of language and social context can be described as figure 2.

**Figure 2.** Functional diversification of language and social context (Martin, 1997:5).

The realizations of language and social context are further described within the model. When it comes to language, the SFL framework makes a distinction between a content level and an expression level (Martin, 1997:5). The expression level is concerned with the organization of segmental and prosodic realizations of meaning in spoken and written language (phonology/graphology). The content level involves the construal of meaning and is described as consisting of lexicogrammar and discourse semantics.

The social context is stratified in a similar way and comprises the levels of register and genre. Register refers to a general combinatory term for field, tenor and mode (see figure 2). Genre is regarded as on a higher level of ab-
straction and set beyond the metafunctions. The combination of these features can be described as in figure 3.

Figure 3. Language metaredounding with register, metaredounding with genre (from Martin, 1997:8).

Martin’s well-known definition portrays genre as “a staged, goal-oriented social activity” (Martin, 1992:505). Martin and Rose further elaborate that genres are “social because we participate in genres with other people; goal-oriented because we use genres to get things done; staged because it usually takes us a few steps to reach our goals” (Martin & Rose, 2003:7-8). Each genre has a distinctive structure, with defined stages, with a beginning, a middle and an end which all are significant in achieving the function of the genre. Narratives, accounts, recounts, explanations, arguments, reports and expositions are all common genres in the context of schooling. They have their own distinctive structure because of the social purposes they fulfill in their setting.

The use of the concepts of genre and text type within the frame of SFL is different from the everyday notion of genre, as well as the notion within other frameworks (discussed in e.g. Paltridge, 1996). As mentioned, the definition of genre within the SFL framework is based on communicative purpose. A narrative is a narrative because of its communicative purpose to entertain and invoke feelings. But different narrative texts can be different from each other when it comes to subject and form as long as they share at least some stages and the same communicative purpose. In a discussion of
system and instantiation, *text type* is seen as considerably closer to the actual instance and defined as “generalized instances, a set of texts that actualize the potential of the system” (Martin & Rose, 2003:270).

Systemic functional linguistics is a complex and elaborated model of language and social context and is described only briefly in this chapter. The focus of my interest in this thesis is not on the theoretical framework of SFL, but on research about textbook texts, based on the SFL framework. A consequence of the general model’s view of language as a realization of social context is that developing knowledge and understanding in school subject areas also means developing control of the linguistic resources that construct and communicate that knowledge and understanding. From a text perspective the consequence is that texts produced for different purposes in different contexts have different features. These different features, or lexicogrammatical choices, are made on the basis of the speaker/writer’s perception of the social context (Halliday, 1994) but also serve to realize that social context. In an educational setting it is thus important for students to develop academic language in different disciplines. Research within SFL shows that subject areas have their own characteristic language forms and therefore require distinctive literate practices.

The framework of systemic functional linguistics is above all used and discussed in the chapters about abstraction, chapters 4, 5 and 6.

### 2.2 Language as part of practices

The view of language as part of a practice is by no means incompatible with the framework of SFL. Halliday (1993) states that:

> Any variety of language, whether functional or dialectal, occupies an extended space, a region whose boundaries are fuzzy within which there can be considerable internal variation. But it can be defined, and recognized, by certain syndromes, patterns of co-occurrence among features at one or another linguistic level – typically features of the expression in the case of a dialect, features of the content in case of a functional variety or register. Such syndromes are what makes it plausible to talk of a ‘language of science’. (Halliday 1993:4)

Gee (2003:28) describes the situation as “After all, we never just read ‘in general’, rather we always read or write something in some way.” Different domains such as newspapers, poetry, instructions on how to put together furniture, all have their own rules and requirements. They are also culturally and historically distinct ways of reading and writing and thus constitute different literacies.
These specific expectations on the situation can be described as practices from a socio-cultural perspective. But when the focus in the framework of SFL is on language in social context, from a socio-cultural perspective the practice, or social context, is in focus, and language usage seen as one of several parts of the practice. A socio-cultural perspective is concerned with the relationship between human action and the cultural, institutional and historical contexts in which this action occurs (Wertsch, 1998:24).

The types of activities that count as reading and as literacy in general have varied from society to society and from time to time. From a socio-cultural perspective, human actions are always situated in a social and cultural context and in interaction with other people. Language use in this sense is not regarded as separate from other human actions (Säljö, 1999:81). People learn by participating in social practices and by communicating with other people.

The way in which a text is interpreted is largely dependent on the practice it is involved in. Therefore we cannot regard reading or writing as a set ability that a student has or does not have. Reading and writing must instead be seen as parts of social practices with distinct communicative purposes.

From a socio-cultural perspective, actions and practices are seen as mutually constituting (Säljö, 2000:128). Reading within a practice is regarded as a constituting part of the practice, but the reading in itself cannot be regarded as the entire practice. All kinds of reading are placed in a framework of social and cultural and historical factors. There is a person who is doing the reading, there is a situation in which the reading takes place and there are motives for the reading. These are all aspects which create the meaning of the reading.

What is considered successful learning, by the school and by society, is related to the mastering of a special form of institutional communication. Säljö (2000:212) describes this special form of institutional communication as aiming towards recontextualization. To master recontextualization it is important for students to accept the conditions at stake. If a student does not accept these conditions within a certain discourse, coming to terms with regarding dogs as mammals and not pets in biology, for example, he or she will have trouble appropriating this particular text.

Reader development, seen from a socio-cultural perspective, could be that the student, in interaction with others, participates in many different practices where reading and writing are included, thus gradually mastering and appropriating these practices (Wertsch, 1998).

The socio-cultural perspective on learning is mostly used in chapters 8 and 9.
2.3 Language as ideology

Critical discourse analysis (CDA) shares with SFL, as well as with the sociocultural perspective, the feature of regarding the social context as crucial for any investigation of language use. But critical discourse analysis in general also has the intention of studying the relationship between discourse, power and ideology. The notion of discourse has been under debate for a long time and the term has been used in a number of different ways. Within the framework of critical discourse analysis, however, it is used in a sociological rather than linguistic way. Discourse is seen both as a way of representing a social pattern and as a form of knowledge. Discourse is thus the social framework which limits what we are allowed to say and not say within a certain domain. Foucault (from Luke, 1995:8) describes how discourse, defines, construes and positions human subjects, both in broad social contexts and more locally.

A central thought in critical discourse analysis is the perspective on discourse as a catalyst of social values. The double roles of discourse are emphasized; it is construed by society and contributes to the construal of society. Fairclough (1992:8-9) states that discourse contributes to constituting and changing knowledge, but it is also ideologically motivated. Discourse is shaped by relations of power and supported by ideology.

CDA is described by Fairclough (1995:2) as a three-dimensional method with the aim to map the three separate forms of analysis onto one another:

- Analysis of language texts, both spoken and written
- Analysis of discourse (processes of text production, distribution and consumption)
- Analysis of discursive events as part of sociocultural practice

These three steps of analysis include the linguistic description of the text, the interpretation of the relationship between the discursive processes and the text and the explanation of the relationship between the discursive processes and the social processes (Fairclough, 1995:97). There are obvious similarities between this model and the model described by Halliday and Martin in the SFL framework mentioned earlier in this chapter. Especially when it comes to the interpersonal metafunction within SFL, questions of power are central.

Relevant to this study is the relationship between text and reader, and in a larger perspective also between discourse and discourse actor. From the per-
spective of critical discourse analysis, Kress (1993:170) questions some of the assumptions which linguistics traditionally has relied on:

The text as such is seen as unproblematically established, fixed and bound.

Reading is regarded as a reflection of text production and readers are seen as identical with the creator of the text.

Language is seen as an autonomous, independent system distinct from other social systems.

In critical discourse analysis there is an ambition to problematize these and similar assumptions and by seeing texts in a broader perspective, also including aspects such as reader positions and text-creator positions. The view of reading in CDA is in this sense a reaction against a more traditional comprehension of reading. In this traditional comprehension, the text is regarded as the fundamental and the starting-point and the reader has more of a passive and receiving role. In contrast to this traditional comprehension of readers, CDA describes the reader as an active agent, discursively experienced before the actual encounter with the specific text. The reader thus reconstructs the text as a system of meaning which can be more or less equivalent to the ideological content of the text (Fowler, 1996:7).

Kress (1989) describes the activity of reading as linked to the formation of identity. The text constructs its ideal reader by providing a reading position from which the text is unproblematic and neutral. In the short run, the reading position is shaped by the discourse in which there are instructions on how to read and interpret the text. In the long run, the recurring reading position constructs subject positions. This process is realized by groups of statements which at the same time describe and define different ways of acting in different situations, and different ways of thinking and being as women, men, fathers, mothers, students, teachers and so forth (Kress, 1989:36).

Luke (1995) emphasizes the importance of the social context in the formation of individual identity. Growing up in families, societies and in a popular culture, involves the development of complex discursive resources to read, write and understand the social and material world. Learning to handle texts and discourses is in this sense much more than language development and language proficiency. It involves development and understanding of common sense and hegemonic truths about social life, politics and cultural practice. For the establishment of values, subjectivities and comprehension of text, the texts in themselves are thus important.

The texts children have encountered before and out of school are important to the way in which children encounter texts in school. There are large differences in different students’ discursive resources in many ways, among them in the way some discourses are selected, in the way social relations of
power are sanctioned and encouraged, and in the way some spoken and written practices are linked to each other. In school institutional texts and discourses can be seen as creating a variety of official knowledge. The students’ previous encounter with different discourses can to varying degrees be compatible with the official knowledge the school context presents.

Related to the framework of critical discourse analysis is critical language awareness, which has the function of a practical/pedagogical application of the ideas put forward in critical linguistics (Fairclough, 1992:18-22). In the area of critical language awareness, questions which can be used in the classroom are formulated; such as Who wrote the text? What was the purpose of writing the text? Who is the intended reader? Could it have been written in another way?

The perspective of critical discourse analysis is used mostly in chapter 7. However, the fundamental assumption of CDA, the view of language as ideologically significant, is discussed in chapter 10.
CHAPTER 3
Data and method

This chapter is intended to give a background concerning the data and method used in the forthcoming chapters.

The work presented in this thesis has been carried out within the context of a larger project. Both the data used and parts of the analytical framework are from the project Students’ encounters with different texts in school. Since part of the analysis and the selection of the texts are best understood from the perspective of the larger project, a survey of its aims and methods is needed. This chapter will therefore in part be about the general collection of data and general framework of analysis in this project. In this chapter the project will be described in general terms with reference to aims, data and method.

The last section of the chapter will be dedicated to describing the part of the data that is most relevant to the study presented in this thesis, the textbook texts.

3.1 General aims of the project

The project Students’ encounters with different texts in school focuses on the variation of reading and writing in school. Differences and similarities between text cultures in different subject areas are central to the project. What are the characteristics of reading and writing in Swedish literature classes, in social science classes and in natural science classes? Related to these issues are questions concerning integration and marginalization in a society where literacy is of the utmost importance.

Reading and writing of different types of texts are central to learning in all subject areas. But entering formal education means entering a world of novel ways of using language, different from the experiences of everyday uses of language all children have from the pre-school years. International literacy surveys (Grunden för fortsatt lärande, 1996; The IEA Study of Reading Literacy, 1994) show that Swedish children and adolescents from an international perspective perform well on these tests, but there is a group of students (about 5%) who are only able to read very simple texts. The project focuses on these students.
Even though there are other influences on children’s reading and writing, school plays a unique role when it comes to defining what reading and writing are and to offering students ways of using and producing texts. The point of departure in the project is a perspective on reading and writing as not isolated, but situated activities. From a socio-cultural perspective, Säljö (2000) regards different forms of written language use as socio-cultural activities, involving physical and intellectual tools. The way in which a text is interpreted is largely dependent on the practice it is involved in. The types of activities which count as reading and literacy have varied from society to society and from time to time. From such a perspective reading and writing cannot be regarded as a set ability that a student has or does not have. Reading and writing is instead seen as various social practices with distinct purposes. Luke and Freebody (1997) maintain that one learns to handle text in different ways by having the possibility of participating in practices where texts are handled and used in different ways. How this is accomplished, how texts are used and handled, is dependent on what is regarded as valuable and meaningful in the cultural context (Luke & Freebody, 1997; Säljö, 2000; Baker, 1994). A student’s failure to use and handle a text can then be viewed as a lack of practice rather than a cognitive deficit.

A view of reading as an unlimited set of practices easily raises the question of what practices the school should introduce and encourage. From this point of view, literacy, rather than being a neutral ability, is constructed by society on a general level. One step down from this general level is the school, an institution which arguably plays an important part in the activity of constructing what counts as literacies (Baker, 1994).

On a more concrete level the following pedagogical questions can be asked; Who is going to learn?, What is to be learned? and How is this going to be learned? (Liberg et al., 2002)
The *who* aims at capturing the students’ prior experience and knowledge, needs, motives and interests. The *what* is about the long-term and short-term goals with the learning and the texts in question. The *how* combines and relates to the *who* as well as the *what*. Of importance to the *what*, the *how* and the *who* is naturally the educational context and the society in general.

Furthermore, in the analysis of practices involving texts carried out by the project collaborators, it is important to underline that the only aspect that we can really discuss is the ways in which the students talk about the texts. What the student might or might not do with the text individually, or might think without being able to express, is out of the reach of our analysis. Furthermore, it is the things that the student is able to express that the school system evaluates and what counts in school and in society.
3.2 General description of data

3.2.1 The students in the study

As earlier mentioned, students that do not perform very well when it comes to reading and writing are the focus of the study. As a comparison, a smaller group of high-achieving students in every school grade also formed part of the study. The teachers’ assessment of the students as low-achieving or high-achieving has been the starting point. No diagnostic tests of the students’ ability to read and write in different subject areas have been administered in advance. However, the teachers were instructed not to choose students with diagnosed dyslexia.

Half of these students are bilingual and half of the students are monolingual (Swedish-speaking). Among the bilingual students there are great differences in their specific language situations. Some of them have one Swedish-speaking parent and one parent with another first language and have lived all their lives in Sweden. Other bilingual students came to Sweden only a few years before our encounter with them, and do not speak Swedish at home. With the distribution of bilingual and monolingual students it is possible to make interesting comparisons between the two groups of students, but this is beyond the scope of this thesis.

Within the group of low-achieving students there are bilingual as well as monolingual students. With the previously mentioned results from international literacy surveys as a starting point, half of the student group were chosen on the basis of being bilingual. Naturally, there are bilingual students in the group of low-achieving students as well as in the group of high-achieving students.

Table 1. The students in focus in the project “Students’ encounters with different texts in school”

<table>
<thead>
<tr>
<th></th>
<th>Grade 5</th>
<th>Grade 8</th>
<th>Grade 11</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-achieving</td>
<td>44</td>
<td>42</td>
<td>26</td>
<td>112</td>
</tr>
<tr>
<td>students:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-achieving</td>
<td>17</td>
<td>17</td>
<td>8</td>
<td>42</td>
</tr>
<tr>
<td>students:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monolingual</td>
<td>31</td>
<td>35</td>
<td>27</td>
<td>93</td>
</tr>
<tr>
<td>students:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bilingual students:</td>
<td>30</td>
<td>24</td>
<td>7</td>
<td>61</td>
</tr>
<tr>
<td>Female students:</td>
<td>28</td>
<td>33</td>
<td>24</td>
<td>85</td>
</tr>
<tr>
<td>Male students:</td>
<td>33</td>
<td>26</td>
<td>10</td>
<td>69</td>
</tr>
<tr>
<td>Total:</td>
<td>61</td>
<td>59</td>
<td>34</td>
<td>154</td>
</tr>
</tbody>
</table>

The students in the study come from different classes and different schools in central and southern Sweden. When possible, we have tried to get as great
a variation as possible concerning school areas with respect to small and large cities and areas with predominantly monolingual and bilingual speakers. The reason for the smaller amount of data in grade 11 is above all practical. The analysis of the data from grades 5 and 8 turned out to be more time-consuming than expected.

As mentioned earlier, the data was collected from grade 5 (students typically 11 years of age) and grade 8 (students typically 14 years of age) in the compulsory school and grade 11 (students typically 17 years of age).8 In upper secondary school, where students have a choice of programme, students from the social science program, the children and recreation program, and the hotel and restaurant program participated in the study.

In general, 6 or 7 students in every class were selected by the teacher to participate in the study. Usually, five of these were assessed as low-achieving and two of them as high-achieving by their teachers. Sometimes, two or three classes from the same school participated in the study.

Table 2. *Number of schools and classes participating in the study*

<table>
<thead>
<tr>
<th></th>
<th>Grade 5</th>
<th>Grade 8</th>
<th>Grade 11</th>
<th>Total:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of schools</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Number of classes</td>
<td>8</td>
<td>10</td>
<td>5</td>
<td>23</td>
</tr>
</tbody>
</table>

3.2.2 A general description of the texts

As mentioned above, the texts in the study were read and used in Swedish classes, social science classes and natural science classes. From the Swedish classes only literary texts were included in the study. Other texts occurring, about Swedish grammar or literary history, for example, were excluded. One reason for this choice has to do with the aim to portray the most frequently occurring texts in the classrooms. In our study, the most frequent texts in the Swedish classes were the literary texts. Other reasons for choosing literary texts have to with the contrast between these texts and the content area texts in social science and natural science. Children are generally familiar with this genre from early childhood through children’s books and other media. The literary texts can from this perspective be seen as a contrast to the unfamiliar and increasingly specialized texts from social science and natural science. It is from this perspective interesting to see the differences between the

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8 As previously mentioned, the Swedish elementary school system consists of nine years of compulsory school and three years of voluntary upper secondary school. Almost all students from compulsory school (98%, 2002) continue to upper secondary school (Statistiska meddelanden UF73SM0301, 2003). As the compulsory school, the upper secondary school is free of charge.
students’ way of approaching texts from familiar and unfamiliar genres. Also, the rationale behind reading narrative texts in school, such as developing the subjective experience (e.g. Langer, 1995), differs from those for reading social science and natural science texts. All in all, the Swedish literary texts provide from several perspectives a useful contrast to the content area texts from social science and natural science.

As in other countries, in Sweden social science and natural science are often studied in earlier grade levels as combined subject areas. The separation of these larger subject areas into more specialized subject disciplines such as geography, history, religion, civics and chemistry, physics biology, usually takes place in grade 7 (the year most children turn 13). In the project, the larger categorization of social science and natural science is maintained throughout all three grade levels studied. Thus the texts categorized as social science in grade 8 and grade 11 can be from any of the disciplines of geography, history, religion, or civics. The texts labeled natural science are from any of the subject disciplines chemistry, physics or biology. Since we usually stayed in classes for only two or three weeks, the broader categorization of subject areas was the only feasible option. Normally, few classes in grades 5 and 8 take courses in all the more specific disciplines all the time, usually the students have courses in one or two of them at the same time. If we had chosen for example only history and chemistry, the number of possible schools to visit would have been very limited.

When visiting the schools, we collected texts which were part of the activities in the classroom: one text from a Swedish literature class, one from any social science class and one from any natural science class. In most cases, these texts are extracts from textbooks that the students used at the time of our visit. The number of words in these texts will be described further in section 3.4.

Table 3. Number of textbook texts (and other educational texts)

<table>
<thead>
<tr>
<th></th>
<th>Grade 5</th>
<th>Grade 8</th>
<th>Grade 11</th>
<th>Total:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swedish literary texts</td>
<td>3</td>
<td>9</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>Social science texts</td>
<td>7</td>
<td>9</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>Natural science texts</td>
<td>6</td>
<td>9</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Total:</td>
<td>16</td>
<td>27</td>
<td>15</td>
<td>58</td>
</tr>
</tbody>
</table>

We also asked all students to show us texts they had written themselves within all three subject areas. These texts were also photo-copied. The student texts show great variation, ranging from quickly scribbled notes from a lecture, to thoroughly written stories and reports from science experiments. The lengths of the student texts also vary from a few sentences to several
3.2.3 Different types of data

Besides the texts described above, other sorts of data were gathered from the 23 classes that participate in the study. In the different grade levels, we visited five to ten different school classes during two or three weeks. During these weeks, one of the co-workers in the project followed the relevant subject areas in the classroom and took notes. She also interviewed students and teachers about the texts they were working with at the time. The overall collection of data consists of:

- 58 textbook texts
- 402 student texts
- interviews with 154 students about the texts they have read and written, approximately 1 to 1,5 hours interview per student
- interviews with teachers in the 23 classes
- notes taken from the activities in the classrooms

3.3 General description of analysis

The overall aim of the project is to describe differences and similarities between text cultures in different subject areas. To reach this aim, four different analytical entry points, developed in interaction with data, were used:

- analysis of the textbook texts and the student texts
- analysis of the students’ way of approaching the texts
- analysis of the students’ way of approaching the text activities
- analysis of the activities surrounding the reading and writing of texts

These four analytical entry points correspond to the aspects of learning presented in the triangle of learning presented in figure 4. The analysis of the texts corresponds to the aspect of what the students are going to learn. The analysis of the students’ way of approaching the texts corresponds to who is going to learn in relation to what is going to be learnt. The analysis of the students’ way of approaching the text activities has to do with who is going to learn in relation to how it is going to be learnt. Finally, the analysis of the

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9 Since not all students had written a text in all three subject areas, or could find the texts they had written, the number of texts is 402 and not (3 times 154 students) 462 texts.
activities surrounding the reading and writing of texts corresponds to the aspect of how it is learnt in the classroom.

Each analytical entry point is built on several categories of analysis. With these analytical entry points we will not only give portrayals of different students’ way of approaching the read and written texts. We also aim at describing their approach to different specific texts, an overall attitude towards working with texts, the characteristics of the specific texts and the contextual conditions in question in the actual encounter between student and text. The approach of the analysis in this chapter will be to describe in more detail the analytical tools that I have used in the analysis of the abstraction.

The analysis of the features above is carried out with a combination of qualitative and quantitative approaches. The analysis of the texts is mainly quantitative in the sense that linguistic features are counted and categorized from different perspectives. The analysis of abstraction and technicality, however, is based on a qualitative assessment of the nouns and verbs based on previously agreed criteria. The analysis of the interviews with the students and the activities in the classroom are to some extent built on the researchers’ construal of the students’ ways of working with texts and the classroom activities. However, the final analysis is a result based on references to several specific instances of statements from the students in the interviews and specific parts of the notes taken during the classroom practices.

In the process of analysis, the final step was a joint overall assessment of every category, on a three-graded scale. In order to achieve valid assessments, criteria for the assessment of every category were worked out jointly by the co-workers in the project. For example, a specific student’s text movability when reading for example the social science text in question, after identifying relevant instances from interviews and classroom notes, was assessed as low, intermediate or high. These are the values that are used in chapter 9. Throughout the analysis we tried to maintain an awareness that what is being described is the students’ way of talking and acting with texts in the interviews and in the classes we attended, not their inner understanding of texts or their potential to work with texts under other circumstances.

3.3.1 Analysis of the textbook texts and the student texts

To describe the texts that students have read and written we focused on four aspects of textual analysis: the structure of the text, how the reader is involved in the text, the degree of abstraction and technicality in referents and processes, and the density of the text. The same analytical aspects and tool were used on textbook texts as well as student texts.10

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10 The only exception is that the students’ writing is assessed in terms of its grammatical correctness. This analysis has been regarded as unnecessary when it comes to the textbook texts.
The first aspect concerns the structure of the texts. One important feature of this analysis is the identification of cohesive chains in the text (Halliday & Hasan, 1976:15, Halliday & Hasan, 1989). Recurrent references to the same referent, co-reference, to referents that belong to the same semantic group, co-classification, and to referents that belong to the same semantic field, co-extension, are grouped together in a chain that runs through parts of the text of through the whole of it. In the text extract below the references to the boy form one cohesive chain and the references to the giant form another.

Once upon a time there was a boy who grazed his goats in the forest. One day he happened to get close to a mountain, where a giant lived. The giant was disturbed and woke up. Angrily, he chased the boy and his goats through the forest.

That night, the boy took a piece of soft cheese and rolled it in sand and gravel until it looked like a stone. The next day he brought his goats once again to the mountain. The giant came bursting out:

- What are you doing here? he roared.
- Grazing my goats, dear master.
- Bugger off, you lousy creep, the giant shouted. If you ever show up again, I’ll treat you like this. (Min skattkammare, 1988:72-73)

The references to the boy in the extract are: a boy, he, the boy, the boy, he, you, you lousy creep, you, you. The references to the giant are: a giant, the giant, he, the giant, he, dear master, the giant, I. The cohesive chains can be used to describe the general cohesion in the text. Texts with few but long cohesive chains are semantically different from text with many but short cohesive chains. Cohesive chains can also be used to describe the main referents, and thus the main participants in the text. This aspect of the analysis is used in section 6.5.

The second aspect of analysis concerns to what degree the text has features that involve the reader in the text. Earlier research shows that a high degree of voice, with more active verbs, with everyday language and with direct address to the reader, for example, might help students to read and remember texts (e.g. Beck et al. 1995, Reichenberg, 2000). In our analysis we focused on explicit references to the author or the reader, such as direct questions to the reader, and addresses such as What do you think happens

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På kvällen tog pojken en bit mjukost och rullade den i sand och grus, så att den liknade en grästen. Nästa dag förde han på nytt sina getter till berget. Jätten kom utfarande:
- Vad gör du här? vrålade han
- Vallar mina getter, kära far.
- Packa dig i väg, ditt usla kryp, skrek jätten. Om du någonsin kommer hit igen, så ska jag göra så här med dig.” (Min skattkammare, 1988:72-73)
when you blend the two solutions? This analysis of the textbook text is partly used and discussed in section 7.5.1.

The third aspect is the degree of concreteness/generalization and everyday use/technical use in processes and referents. The analysis of abstraction described in chapter 4, and used in chapters 5 and 6 is an expanded and modified version of this analysis. The most important modification in the analysis of abstraction in later chapters is a three-degree scale of abstraction (specificity-generality-abstraction) instead of two-degree scale (concreteness-generalization).

In the analysis of technicality the degree of everydayness and technicality is assessed qualitatively. This analysis is used without further modifications and is described in section 4.5, and used in chapters 5 and 6.

The fourth and final aspect of analysis concerns the density of the texts. The analysis is inspired by the concepts of lexical density (Halliday, 1994:351) and of nominal quotient (e.g. Melin & Lange, 2000:49). In the texts we have analyzed the quotient of nouns/verbs to get a simple measure of the texts degree of informational density. Many nouns per finite verb make a text more loaded with information than a text with few nouns per verb. A simple count of the attributes per noun is also used.

3.3.2 Analysis of the students’ way of approaching the texts

The students’ ways of approaching the text is based on the interviews with the students as well as notes taken during the classroom observations. Four central themes are analyzed; the attitude towards the specific text, the text movability in the text, the ability to associate from the text and the opinion on the text’s function and possible addressees. The analysis is inspired by Langer’s (1995) stances for envisionment building, which also focus on the student’s actual encounter with the text.

The first central theme is about the students’ attitude to the specific text. Attitude towards the text and towards the written assignment are discussed during the interviews and qualitatively assessed.

The second aspect concerns the students’ text movability, which has to do with the students’ construal of the text and ability to use it, as seen from their statements in interviews and in the classroom. The concept of text movability is further discussed and exemplified in section 9.2, where the general results of the students’ text movability in different subject areas and grade levels are used.

The third theme relate to the students’ associations with the text as a starting point. These associations are both about experiences outside the text and to other texts.

The fourth aspect is about the function of the text, the students’ construal of the text’s possible addressees and author.
3.3.3 Analysis of the students’ way of approaching the text activities

The students’ way of approaching the text activities are described partly through observations in the classroom, partly through interviews with students and teachers. Three aspects were in focus in the project; the students’ active participation and initiative in the text activities, the students’ own planning and structure of their assignments and the students’ own initiative towards dialogicality. The analysis of the students’ way of approaching the text activities is not further used in this thesis.

3.3.4 Analysis of the activities surrounding the reading and writing of texts

The analysis of the activities surrounding the texts is also based on both the classroom observations and the interviews. The aspects taken into special consideration concern:

- to what extent the students have an opportunity to take part in planning and influencing the classroom activities
- to what extent there are explicit routines and structure in the work with text
- to what extent there is variation when it comes to different modes of expression, e.g. reading, writing, drama, drawing, individual activities, joint activities
- the variety and existence of ways of responding and giving feedback to text activities, concerning structural as well as functional aspects
- to what extent the text activities, i.e. the teacher and the students together, create dialogicality

The activities in the classrooms are further discussed and described in terms of their dialogicality in chapter 8.

3.3.5 An overall survey of the analysis

A general picture of the analysis in the project *Students’ encounters with different texts in school* is presented in table 4. The parts in bold print are the instances of analysis that are further used in the thesis. A reference to the relevant section in the thesis is within parenthesis.
Table 4. *The overall structure of the analysis.*

<table>
<thead>
<tr>
<th>Analyzed entities</th>
<th>Type of analysis</th>
<th>Categories of analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>THE TEXTS</td>
<td>Analysis of the texts</td>
<td>• <em>Structure:</em> cohesive chains (6.5), genre</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <em>Voice and reader address:</em> explicit references to author/reader (7.5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <em>Abstraction and technicality:</em> concrete-generalized referents (chap. 4, 5, 6), non-technical vs. technical referents (chap. 4, 5, 6) and non-technical vs. technical processes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <em>Density:</em> referents/verbal unit, instances of ref./types of ref., attributes/ref., attribute/attribute occasion</td>
</tr>
<tr>
<td>THE STUDENTS’ INTERACTION WITH THE TEXTS</td>
<td>Analysis of the students’ way of approaching the texts</td>
<td>• The attitude towards the text</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Text movability within the text (chap. 9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Associations out from the text</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Awareness of the text’s function and addressees</td>
</tr>
<tr>
<td></td>
<td>Analysis of the students’ way of approaching the text activities</td>
<td>• The student’s participation and initiative in the text activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The students’ structuring of their assignments</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The student’s dialogicality</td>
</tr>
<tr>
<td>THE ACTIVITIES SURROUNDING THE TEXTS</td>
<td>Analysis of the activities surrounding the reading and writing of texts</td>
<td>• The degree of student influence on the classroom activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The degree of explicit routines and structure in the text activities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The degree of variation of different modes of expression</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The degree of dialogicality in the activities (chap. 8)</td>
</tr>
</tbody>
</table>

3.4 The textbook texts

My work in this thesis focuses on the 58 textbook texts. They therefore deserve a more detailed description. This section will deal with the origin, the selection and the length of these texts. The question of possible classifications of the texts will also be addressed.
3.4.1 The selection and sources of the texts

The selection of texts has been made in accordance with the project *Students’ encounters with different texts in school* as described in the previous section. In other words, the texts in the study are the ones that are part of the classroom activities for the time of our visit. Since one of the aims of the project is to describe texts in situated contexts, this was the most important condition in the selection of these texts. At certain points in the process of gathering data, we came across classrooms where no texts were used at the time of our visit. In these cases we have asked for texts read earlier in the specific class. In classes where no such text was found we introduced texts. In the study we gathered data from 23 different classrooms. In all of these classrooms we focused on the three subject areas of Swedish, social science and natural science. On 11 occasions it was not possible to obtain a text that formed part of classroom activities. In these cases we introduced texts to the students ourselves. Often, these texts had been used in another class from the same grade level in the study. There are, as mentioned in an earlier section, 58 different texts that the students read in the study.12

Hitherto, these texts have been categorized as textbook texts. In most cases they are textbook texts but there are exceptions. The texts analyzed are in fact any educational text material used in the classroom, sometimes newspaper articles and sometimes texts written by the teacher.

As mentioned earlier, the discursive texts labeled social science and natural science are, in grades 8 and 11, from different minor subject disciplines. Table 5 describes the sources of the texts and to what minor subject discipline they belong.

<table>
<thead>
<tr>
<th>Grade and subject area</th>
<th>Source</th>
<th>Subject discipline</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grade 5</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 5 – Swedish literary texts (3 texts)</td>
<td>Textbook (1)</td>
<td>Swedish (3)</td>
</tr>
<tr>
<td></td>
<td>Children’s novel (1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extract from national diagnostic material (1)</td>
<td></td>
</tr>
<tr>
<td>Grade 5 – Social Science texts (7 texts)</td>
<td>Textbook (6)</td>
<td>Social science (7)</td>
</tr>
<tr>
<td></td>
<td>Material produced by a teacher (1)</td>
<td></td>
</tr>
<tr>
<td>Grade 5 – Natural Science texts (6 texts)</td>
<td>Textbook (5)</td>
<td>Natural Science (6)</td>
</tr>
<tr>
<td></td>
<td>Material produced by a teacher (1)</td>
<td></td>
</tr>
</tbody>
</table>

12 By coincidence, two classrooms read the same pages in the same textbook at the time of our visits. This jointly studied text has been analyzed in two different classroom settings and thus regarded as two different texts.
The textbooks are completely dominating as source in social science and natural science. 96% of the natural science texts and 92% of the social science texts are from textbooks. When it comes to the literary text, the distribution is different. If anthologies are categorized as textbooks, 48% of the literary texts are from textbooks. The remaining texts are from novels. As expected, the percentage of novels used in Swedish lessons increases across the grade levels.

The 58 texts in the study are rather evenly distributed over the three subject areas with 17 literary texts read in Swedish classes, 21 texts read in social science subjects and 20 texts read in natural Science classes. The fact that there are relatively few Swedish literary texts in grade 5 has simply to do with early decisions in the data collection, where the variety of texts was not a central issue.

As mentioned earlier, the most common structure in grade 5 is to treat social science as one single subject area and natural science as one. This is changed in grade 7, where specific subject disciplines such as geography and chemistry are studied. The texts in social science are rather evenly distributed over these specific subject disciplines. When it comes to the distribution of texts in natural science, by coincidence, a large part of the texts are from chemistry classes. In grade 11 all social science texts are from civics classes. This is also a coincidence rather than a deliberate choice. The distribution of subject areas in natural science has to do with the choice of programmes. None of the programmes represented in the study has natural science as a focus. Therefore, subject disciplines such as biology, chemistry and physics are once again studied as one single subject area of natural science. The only
exception is the elementary course in medicine from the Child and Recreation Program.

Bearing the other aims of the project in mind, it is clear that the selection of texts cannot be seen as a statistically strict random sampling of all Swedish textbooks texts written for the subject areas and grade levels in question. Without the strict random sampling of texts there is always a risk of a lack of representativeness in the data. However, there are some arguments in favour of a view on the textbook texts as reasonably representative. In the study, the textbooks texts from the different classrooms are the texts the students actually read. They were selected on the criteria that they were actually read in the classrooms. The texts are also from different textbooks and written by different authors, published in different years and by different publishing companies. With representativeness in this sense, and aware of possible objections, I will however in chapter 5 test the significance of different degrees of abstraction in texts from different subject areas and grade levels.

3.4.2 The length of the texts

An important question in any text linguistic research is the quantity of text in the corpus. In this section three measures of the lengths of the texts will be presented. The total number of words amount to almost 28 000.

Table 6. Total number of words in the corpus

<table>
<thead>
<tr>
<th>Grade</th>
<th>Swedish Literary texts</th>
<th>Social Science texts</th>
<th>Natural Science texts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 5</td>
<td>2150 (3 texts)</td>
<td>2805 (7 texts)</td>
<td>2506 (6 texts)</td>
</tr>
<tr>
<td>Grade 8</td>
<td>4426 (9 texts)</td>
<td>3835 (9 texts)</td>
<td>4869 (9 texts)</td>
</tr>
<tr>
<td>Grade 11</td>
<td>2288 (5 texts)</td>
<td>2607 (5 texts)</td>
<td>2467 (5 texts)</td>
</tr>
<tr>
<td>Total:</td>
<td>8864</td>
<td>9247</td>
<td>9842</td>
</tr>
</tbody>
</table>

The primary focus in this thesis is on degree of abstraction in the referents of the texts. Therefore, a description of the number of referents in the text corpus could be of interest.

Table 7. Total number of referents in the corpus

<table>
<thead>
<tr>
<th>Grade</th>
<th>Swedish Literary texts</th>
<th>Social Science texts</th>
<th>Natural Science texts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 5</td>
<td>648 (3 texts)</td>
<td>1261 (9 texts)</td>
<td>644 (5 texts)</td>
</tr>
<tr>
<td>Grade 8</td>
<td>1261 (9 texts)</td>
<td>2467 (5 texts)</td>
<td>644 (5 texts)</td>
</tr>
<tr>
<td>Grade 11</td>
<td>644 (5 texts)</td>
<td>2467 (5 texts)</td>
<td>2553</td>
</tr>
</tbody>
</table>

13 A closer description of the analytical tools used in the analysis of abstraction can be found in section 4.9.
Yet another way of describing the size of the corpus is to list the clause complexes in the texts. Clause complexes are in this context defined as all independent clauses.

Table 8. Total number of clause complexes in the corpus

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Grade 5</th>
<th>Grade 8</th>
<th>Grade 11</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swedish Literary texts</td>
<td>232 (3 texts)</td>
<td>383 (9 texts)</td>
<td>203 (5 texts)</td>
<td>818</td>
</tr>
<tr>
<td>Social Science texts</td>
<td>269 (7 texts)</td>
<td>335 (9 texts)</td>
<td>189 (5 texts)</td>
<td>793</td>
</tr>
<tr>
<td>Natural Science texts</td>
<td>243 (6 texts)</td>
<td>400 (9 texts)</td>
<td>201 (5 texts)</td>
<td>844</td>
</tr>
<tr>
<td>Total</td>
<td>744</td>
<td>1118</td>
<td>593</td>
<td>2456</td>
</tr>
</tbody>
</table>

3.4.3 The categorization of the texts

The selection of texts in this study was made within the project *Students’ encounters with different texts in school* and corresponded to the overall aim of describing texts in situated classroom activities and with actual readers. In line with the larger project is also the choice of the broader subject areas social science, natural science and Swedish literary texts.

An objection to this classification from a text linguistic perspective could be that it has more to do with external conditions than the inner characteristics of these texts. Since the analysis is influenced by Systemic functional grammar to a certain extent, an analysis of the texts’ genres could be considered as an alternative basis for classification. A future analysis of genre in relation to the degree of abstraction would be of interest.

However, in this thesis the basic classification of the texts will be the subject areas they formed part of in the classroom. The larger project’s intention of portraying differences and similarities between text cultures in different subject areas makes this classification the natural point of departure. This classification makes it possible to discuss shared features of different subject cultures. Another reason for starting out from a classification of the text based on subject areas is simply that it agrees with many previous studies in the field, which is an advantage when it comes to comparisons. However, even though a classification of the texts based on subject area is used as a starting point, other classification will be used in order to access the texts from different angles.
CHAPTER 4
About abstraction in textbook texts – earlier research and an attempt to define abstraction

Abstraction can be described from a number of perspectives. This chapter discusses research on abstraction in textbook texts. The first sections will focus on abstraction in school texts in general and in specific subject areas. Two areas stand out as related to abstraction; grammatical metaphor (or nominalization) and technicality. These two areas will also be briefly described. In the later sections of the chapter I identify the criteria that will be used in an analysis of abstraction, grammatical metaphor and technicality in the following chapters.

4.1 The reason for abstraction in text in general

There is no question of the existence of abstraction in texts, even though abstraction can be defined in different ways. But what is the point of making texts abstract at all? One reasonable perspective on this question is the development of society towards increasing specialization. In a specialized society where knowledge is broken down into small parts and small domains, there is a need for specialized grammars. Martin (1993a:135) describes the grammar as:

a grammar that has evolved over hundreds of years, with science at its cutting edge, to construct the world in different ways than talking does. It is a grammar that organises text, that summarises and abstracts, that encapsulates ‘big’ meanings for use elsewhere—a grammar for writing that nominalises rampanty and turns the universe into a set of interrelated things: a grammar that counts.

Abstraction can be seen as an important feature of many varieties of specialized language. The function of specialized language is not just to use language in a pretentious way which excludes the uninitiated. It is rather a necessary part of that knowledge. Academic contexts are constituted through abstraction in texts.
4.2 The importance of textbooks

There are several reasons for the importance of textbooks. They have a unique role as obligatory reading material (Melander, 1995). There are few other texts that are so directly connected to explicit demands on reading and immediate reprimands for not doing so, to such a significant portion of the population in a compulsory situation.

Investigations also show that textbooks play an important role in structuring classroom activities. Teachers base their teaching on the structure of the textbook and students are supposed to read and work with the textbook texts according to the instructions in the textbook. Harniss et al. (2001:129) cite research that showed that 75% to 90% of American classroom instruction is organized around textbooks. Textbooks seem thus to have an importance not only as reading material but also in terms of providing a structure for classroom activities in general. The study presented in this thesis shows similar tendencies. A dominant part of the texts in this study, which are the texts that happened to be used in classroom activities at the time of our visit, are textbook texts. In content area subjects, 93% of the texts read in the classroom are textbook texts. Even if our collection of text is not a statistically reliable average of texts in Swedish classrooms, it is an indication of the fact that traditional educational media such as textbooks still play an important role, despite good access to computers and the Internet in classrooms.

All in all, it seems like a large part of the texts that students encounter in school are textbook texts. When it comes to the content area texts, the textbooks are especially important since these texts in school are such a large part of all the texts in these genres that the students come across. It is not as natural for social science texts and natural science texts to form part of out-of-school text activities as narrative texts do.

Apart for being reading material, textbooks are important in terms of providing model texts for the students’ writing, both intentionally and unintentionally.

The extensive use of textbooks in schools has been questioned both when it comes to pedagogical and commercial consequences (e.g. an overview in Harwood, 2005). But as it is, textbook texts are important in their function as transition tools towards adult specialized literacies. Even though students read and write in other contexts than those of schooling, a dominant part of their development to competent readers and writers takes place in school. The textbook texts are then the textual paths that students are supposed to walk towards being able to partake of a society’s public texts.

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14 One factor that might favor other educational media than printed textbooks could be the access to computers and the Internet in the classrooms. International comparisons show that Sweden is among the highest ranked countries when it comes to access to computers and the Internet in the classrooms (Strategi för IT I skolan, 2003).
Textbooks are thus interesting from a number of different angles; economical, ideological, pedagogical and linguistic (Melander, 1995:12). This thesis touches upon the latter three with a focus on the linguistic.

4.3 Concreteness, specificity, generalization and abstraction


Consequently, the opposite of abstraction is defined as ‘small range of content’, i.e. hyponyms rather than hypernyms, and ‘singularity’, ‘tangible’, ‘existing in time and place’ and ‘closeness to reader/writer’, (ibid.). Some of these features of abstraction need a more detailed discussion.

4.3.1 Specificity, generalization and hyponymy

There are various expressions which are related to the area of abstraction. Among these are the notions of specificity and hyponymy. Related to them is also the concept of generalization. The definitions given by for example Veel & Coffin (1996) mentioned above combine the notions of generalization and abstraction. Something generalized is in this sense something abstract.

Other researchers however have made a distinction between the dichotomy of specific and generalized and the dichotomy between concrete and abstract. In an early work, M.A.K. Halliday (1970:154) points to a difference between generalization and abstraction. In the former case the specific and the generalized are at the extreme parts of a scale, while in the latter case, we have the distinction between concrete and abstract. The same discussion, with different labels, is also touched upon in a cognitive setting by Taylor (2002:127). Taylor makes a distinction between two uses of ‘abstract’. The first use refers to ‘abstract’ in the sense that hypernyms abstract what is common in the associated hyponyms. The antonym of abstract in this use is specific. The second use contrasts abstract with concrete. These different uses of the concept of abstraction are also often mentioned in dictionary definitions (e.g. Wordnet 2.0, Longman Dictionary of Contemporary English, 1990). A discussion of the differences between the scale of concrete-abstract and specific-generalized will be further discussed in section 4.9.3, concerning criteria for the analysis of abstraction.
4.3.2 Tangibility

The ability to touch or see something is perhaps the most straightforward feature of concreteness/abstraction. Concreteness is a matter of touching, or seeing, something solid. It is possible to touch an apple, but it is not possible to touch an idea. It is possible to see an apple but not to see, in the literal sense, an idea. Naturally, there could be exceptions to this feature of concreteness/abstraction. Geographically limited entities are in most cases regarded as concrete as well as specific—a block, a village, a province or a country—but they are not possible to touch, and not tangible, in the sense that you can touch an apple. Still, we can imagine how it would be possible to touch a country (being a giant or using a representation). This feature then has something to do with things, which we understand as concrete, being limited in space. Even though specificity and concreteness to a great extent overlap, in my opinion, tangibility is more closely associated with concreteness than specificity.

4.3.3 Existence in time and place

The next feature mentioned by text linguists when defining abstraction is the existence in time and place of concrete objects and the opposite quality of the abstract ones. When it comes to texts, existence in time and place must be interpreted in a wide sense. Texts can be described as referring to internal fictive worlds, text worlds (Just & Carpenter, 1987). These text worlds can be the contemporary real world, as in newspapers, or previous real worlds, as in history textbooks, or a fictive world, as in novels. Existence in time and place must then be interpreted as existence within the text world in question, not as an absolute existence in time and place.

Coffin (2002) discusses time as a crucial aspect in the development of texts in school history. She describes a development that ranges from narrative genres situated in time that is about recording the past, to argumentative genres with a text-internal time. Coffin suggests that this transition from narrative genres to argumentative genres in school history, is also a transition towards increasing abstraction.

4.3.4 Distance to reader/writer

In the text linguistic definitions of abstraction, another feature mentioned is the distance in context, and distance between the referents in the text and the reader/writer. Veel and Coffin (1996) define abstraction as:

To what extent participants and places in the text are referred to as singular, tangible entities, close to the lived experience of the writer, or, alternatively, in terms of their political or social roles, in a kind of ‘pseudo-objective’ se-
miotic space. For example, the difference between referring to ‘my mates Jack and Bill’ versus ‘soldiers in the company’. (Veel & Coffin, 1996:203)

The feature of closeness in regard to the writer’s lived experience is perhaps more of a co-occurrence with texts about specific persons and objects than an essential feature of abstraction. Referents with characteristic features of specificity, i.e. ‘tangible’, ‘concrete’, ‘existing in time and place’, are probably in most cases more everyday in nature, but there are exceptions. Highly domain-specific objects, e.g. a needlethreader, can very well be tangible, singular and existing in time and place without being very close to the ‘lived experience of the writer’. However, the aim of this study is to examine levels of abstraction in textbook texts with a developmental perspective and the text’s relation to the lived experience of the writer is in such a context important. Yet, in many cases the concept of an implied reader is a devious one (for further discussion, see e.g. Iser, 1974). An intended reader’s lived experience becomes even harder to specify. But when it comes to textbook texts used in grades 5, 8 and 11, the intended reader is at least explicitly limited by age.

Another description of distance in relation to abstraction is found in Eggins et al. (1993). With SFL as a starting point, they describe, abstraction with reference to the register variable of mode. Mode is about semiotic distance along two scales. The interpersonal scale has to do with the medium used between the interlocutors. Eggins et al. compares speech to writing where speech is immediate and there is oral as well as visual contact between writer/reader, while writing is not necessarily immediate and there usually no oral or visual contact between writer/reader. The experiential scale is about distance between the text and the social realities to which the text refers. This scale ranges from language in action to language as reflection. Eggins et al. claim that there is a correlation between distance along these two scales, on the one hand, and grammatical metaphor (or nominalization), on the other. As will be explained in detail in the forthcoming sections, grammatical metaphors generally invoke an impression of abstraction in texts.

That is, the closer the interpersonal distance between interactants (the more feedback is immediate, the more there is visual and aural contact), the more congruent the language used is likely to be. Thus, when you can see, hear, and immediately respond to your interlocutor you are likely to use very little grammatical metaphor in your language. (Eggins et al., 1993:92)

Likewise, if the experiential distance between text and its context is small, the language is likely to be congruent.
Thus, texts with a large degree of grammatical metaphor are likely to be produced in situations where there is a large experiental and interpersonal distance. Eggins et al. see this as a clue to explaining why grammatical metaphor is “the most distinctive difference between spoken and written texts.”

4.4 Grammatical metaphors in general

Grammatical metaphor is an overall notion, stemming from Halliday’s Systemic Functional Linguistics (SFL), for expressions where the typical way of realization is replaced by a less typical form. Nominalization, where for example an action is realized through a noun, is one example of grammatical metaphor. The notion of metaphor as in the grammatical metaphor described within the framework of Systemic Functional Linguistics (SFL) differs from the rhetorical description of metaphor as a trope, as well as from Lakoff and Johnson’s (1980) cognitive metaphors.

Halliday (1994:342) describes a perspective on metaphor as variation in the expression of a given meaning, instead of the traditional view of metaphor as variation in the meaning of a given expression.

<table>
<thead>
<tr>
<th>Traditional expression</th>
<th>SFL meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. literal meaning</td>
<td>1. congruent expression</td>
</tr>
<tr>
<td>2. metaphorical meaning</td>
<td>2. metaphorical expression</td>
</tr>
</tbody>
</table>

In the traditional view of metaphor, sunshine in the expression You are my sunshine has a literal meaning, the light from the sun, and a metaphorical meaning, the joy of my life.

Halliday’s point of departure is that there are congruent or typical ways of saying things. Things, places and people are typically realized through nouns, actions are realized through verbs and logical relations of time and consequence are realized through conjunctions. His premise is that knowing
the ‘typical way of saying things’ is part of knowing a language. Halliday compares the sentences *Mary saw something wonderful* and *A wonderful sight met Mary’s eyes* and concludes that even though these expressions are not synonymous, they are co-representational. The first is however the most congruent one. The second sentence is metaphorical in the sense that it builds on grammatical metaphor. The distinction can be compared to the distinction between prototypical use – extended use.

Metaphor is a common feature of all adult discourse. Halliday (1994) describes the tension between totally congruent forms and totally incongruent forms of languaging as:

> It seems that, in most types of discourse, both spoken and written, we tend to operate somewhere in between these two extremes. Something which is totally congruent is likely to sound a bit flat; whereas the totally incongruent often seems artificial and contrived. (Halliday, 1994:344)

There are two main types of metaphoric expressions in the clause: metaphors of mood (including modality) and metaphors of transitivity (Halliday, 1994). When it comes to semantic functions there are interpersonal metaphors and ideational metaphors. The hitherto discussed metaphors, and the ones that are focused on in this text, are ideational metaphors and, among them, nominalizations. Even though the SFL framework identifies other kinds of ideational metaphors (e.g. Martin, 1997:32), nominalization is regarded as having a special position when it comes to making texts denser, more abstract and more technical. Since abstraction is the main focus in the work presented in this text, and grammatical metaphor an additional textual feature, I have limited the analysis to nominalization alone.

Among ideational metaphors, Halliday (1994) suggests that nominalization probably evolved first in scientific and technical registers and little by little became part of adult discourse.

Nominalization is, according to Halliday, the single most powerful resource for creating grammatical metaphor. By use of nominalizations, processes (congruently worded as verbs) and properties (congruently worded as adjectives) are turned metaphorically into nouns.

<table>
<thead>
<tr>
<th>congruent form</th>
<th>grammatical metaphor</th>
</tr>
</thead>
<tbody>
<tr>
<td>is impaired by alcohol</td>
<td>alcohol impairment</td>
</tr>
<tr>
<td>they allocate an extra packer</td>
<td>the allocation of an extra packer</td>
</tr>
<tr>
<td>some shorter, some longer</td>
<td>of varying length</td>
</tr>
</tbody>
</table>

(Examples from Halliday, 1994:353)

---

15 Interpersonal metaphors are metaphors where the expression of opinion is dissimulated by a metaphorical representation of modality. The interpersonal metaphor *Mary probably knows* is another way of expressing *I believe that Mary knows* (Halliday, 1994:355). Modality will be further discussed and used in an analysis of the texts in chapter 7.
As mentioned, an important issue when it comes to grammatical metaphor is the discussion of typical and atypical forms, or congruent and metaphorical uses of language. Naturally, languages change, and what is considered a metaphorical use during one period can eventually become accepted as congruent. Maagerø (2002) describes one type of grammatical metaphor as conventionalized, and exemplifies with words such as *a play, a song, a sound, a smile, a taste, a mistake*. These conventionalized grammatical metaphors are not particularly abstract, but part of everyday discourses. Halliday (1994) admits that there is not always a clear line to be drawn between metaphorical and congruent uses of language. One criteria for distinguishing grammatical metaphor is however the co-existence of a congruent and a metaphorical meaning.

The important point to make is that a piece of wording that is metaphorical has as it were an additional point of meaning: it means both metaphorically and congruently. (Halliday, 1994:353)

But the use of grammatical metaphors is also language-specific. In an investigation of grammatical metaphor in Norwegian 10th graders’ argumentative texts, Maagerø (2002) finds that the everyday grammatical metaphors dominate in the Norwegian students’ texts. She suggests that, compared to an English/Australian culture, the linguistic feature of grammatical metaphor is regarded in a different way in Norway. A reasonable explanation of this lack of more technical grammatical metaphors lies, according to Maagerø, in an ideological difference between cultures. Where an English/Australian culture accepts grammatical metaphors as part of a specialized discourse, a Norwegian culture of equality, in for example textbooks on how to write Norwegian, explicitly advises against nominalization.

This situation makes the conventionalized metaphors acceptable, because they belong to the informal every day discourses. Linguistic features like non-conventionalized grammatical metaphors, however, are associated with expertise discourses and seem therefore to be less culturally tolerated. (Maagerø, 2002:102)

4.4.1 The function of nominalizations as grammatical metaphors in texts

Throughout systemic-based literature about the language of schooling, grammatical metaphors are mentioned as an important feature of this register. There are several reasons for this connection, concerning more direct consequences of grammatical metaphor in texts as well as developmental issues and broader aspects about having access to a discourse.

Eggins et al. (1993:76) offers an effective illustration of the consequences of grammatical metaphor in the text, by comparing the sentences:
1. I came back from Bali early because my father died.
2. The reason for my early return from Bali was the death of my father.

The second, metaphorical version has the following characteristics:

- two clauses have been made into one;
- the two Actors (I, and father) are no longer performing actions. I has become a possessive Deitic (an owner not a doer); and father has become a Qualifier;
- the logical connection between the clauses because is now realized as a noun the reason;
- the verbs came back and died are now also realized as nouns return, death;
- early, which was an adverb in the spoken version has become an Epithet in the written version (Eggins et al., 1993:76)

Grammatical metaphors in texts generally invoke an impression of abstraction. Through grammatical metaphors, action is construed as a nominalized participant (the admission of a new state) and whole series of events are presented as a single “participant” (the French revolution) (Schleppegrell, 2004:130). Grammatical metaphor is also an important feature in school-based language because of the consequences within all three metafunctions.16 Schleppegrell (2004) describes how grammatical metaphors are central in the construal of technicality when it comes to ideational meaning. Technical terms are important in developing a chain of scientific reasoning, and the condensing quality of grammatical metaphor is vital in this context. Grammatical metaphor also contributes to giving the text authority and thereby plays a role in interpersonal meaning. Since actions are turned into things by grammatical metaphor, the person behind the action, the agent, becomes invisible. If you use explore as a verb, a subject is needed. Exploration, on the other hand, can serve as a subject itself and conceal any human subjects involved. Finally, grammatical metaphor has consequences for the textual function of texts. Packing information with grammatical metaphor allows reasoning within the clause and facilitates step by step arguments. Earlier information can in this way be summarized and represented as given in a following clause.

The function of grammatical metaphor may vary between subject areas. Martin (1993c:267) suggests that grammatical metaphors in science texts have a distilling function; they “accumulate meaning so that a technical term can be defined”. In history, grammatical metaphors function as scaffolding: they realize actions and events as participants, which allows reasoning

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16 The metafunctions within the framework of systemic-functional linguistics are described in Chapter 2.
within the clause. Thus, grammatical metaphors are important to discourses of humanities and discourses of science but function in different ways.

The role the grammatical metaphor plays as a marker of prestige is related to the issue of authority. A high degree of grammatical metaphor seems to give texts prestige in a western culture (Eggins et al, 1993). The function of uses of grammatical metaphor is sometimes described as one of exclusion. Grammatical metaphors might in this way function as gatekeepers towards uninitiated readers. But of course different language uses might exclude readers in other ways as well. In a description of grammatical metaphors, Halliday gives an unintentional example:

> It has gradually worked its way through into most other varieties of adult discourse, in much of which, however, it loses its original *raison d'être* and tends to become merely a mark of prestige and power. (Halliday, 1994:353)

Using expressions like *raison d'être* without translation or explanation could also be regarded as a mark of prestige and power and as excluding to a large group of readers. In a review of *Grammatical Metaphor: Views from Systemic Functional Linguistics*, Pollard (2004) makes a similar statement when discussing the elitist connotations of texts where grammatical metaphor are frequent:

> Although these points are not dealt with at length, they are frustrating in that it is not clear whether these implications are inevitable features of specialist discourses replete with grammatical metaphors, or statements of tendencies which might be more prominent in some cases and not others. Heyvaert’s comment, for instance, could leave her open to the tu quoque, that, as a proponent of a technical dialect herself, she is being elitist if not obscure. (Pollard, 2004:198)

An objection to Pollard’s remark could be that using words like *tu quoque* unexplained, could leave Mr. Pollard open to an accusation of elitism. The issue of excluding forms of language uses goes beyond the use of grammatical metaphor.

Schleppegrell (2001) emphasizes the beneficial effects of nominalization:

> At the same time the strategies of the school-based register may obscure some kinds of meaning, the nominalization and clause-condensation strategies are functional for realizing school-based texts. As a resource for structuring texts, nominalization is functional for presenting information in subject position or as clause theme so that it can be further commented on in the clause complement. (Schleppegrell, 2001:453)

Schleppegrell’s point of view is that the linguistic features of school-based texts, such as nominalization, are functional and therefore cannot be altered without a loss of utility.
4.5 Technicality

Another feature of a movement towards specialized discourse is the degree of technicality. Especially the language uses within science are construed through technicality. Even though technicality often co-occurs with abstraction in many specialized discourses, it is not as closely related to abstraction as grammatical metaphor. Therefore the discussion and analysis of technicality is less focused.

Within the framework of SFL, technicality is defined not just as a set of technical terms but as a way of reconstructing experience which depends on technical terms that are taxonomically related.

Two important points about technical terms should now be clear. The first is that technical terms cannot be dismissed as jargon. Technical terms organize the world in a different way than do everyday ones. Referring to a disease with respect to the simplex herpes virus is quite different to naming it cold sores. [Technical discourse can of course be used to exclude; and people are quite justified in complaining when it does so needlessly.] The second is that specialized knowledge is not just a set of technical terms. The terms imply taxonomies which organize reality differently to common sense. Understanding technical discourse means being familiar with these specialized taxonomies and the principles which led to their construction. (Martin, 1993b:205-205)

Technicality is closely related to grammatical metaphor. As mentioned, grammatical metaphors in science texts have a distilling function in the sense that they gather meaning so that technical terms can be defined. They develop chains of scientific reasoning and the condensing quality of grammatical metaphor is in this context vital. Rose (1993:258) gives the following example:

Infrared examination of the oil suggested contamination with perchloroethylene.

The unpacked version of this sentence could be:

When we examined the oil with infrared light we though it was contaminated with perchloroethylene.

Interpersonal differences notwithstanding, between the sentences, the latter, unpacked version requires 15 instead of 9 words.
4.6 The relationship between abstraction, grammatical metaphor and technicality

Abstraction, grammatical metaphor and technicality are all defined on a semantic level. But grammatical metaphor has a structural component in its definition that is absent in abstraction and technicality.

If grammatical metaphors contribute to making texts abstract, what is the relationship between grammatical metaphors and other abstract referents? Martin (1997) outlines a framework for classifying types of things which combines concrete and abstract things with metaphoric ones:


<table>
<thead>
<tr>
<th>indefinite nouns</th>
<th>pro-nouns</th>
<th>some/any/no thing/body/one</th>
</tr>
</thead>
<tbody>
<tr>
<td>concrete</td>
<td>everyday</td>
<td>apple, bottle, blanket</td>
</tr>
<tr>
<td>specialized</td>
<td></td>
<td>matlock, anvil, Tundish car</td>
</tr>
<tr>
<td>abstract THING</td>
<td>technical institutional</td>
<td>inflation, metafunction, gene regulation, bureau, policy</td>
</tr>
<tr>
<td>TYPE</td>
<td>semiotic</td>
<td>fact, idea, word, concept, notion</td>
</tr>
<tr>
<td></td>
<td>generic</td>
<td>colour, time, manner, way, type, set, class, cause</td>
</tr>
<tr>
<td>metaphoric</td>
<td>processual</td>
<td>collision, perception, departure</td>
</tr>
<tr>
<td>quality</td>
<td></td>
<td>strength, bravery, beauty</td>
</tr>
</tbody>
</table>

Martin (1997) admits that it can be difficult to analyze nouns as either abstract or as grammatical metaphors. The noun regulation may refer in one context—the regulations don’t permit that activity—to an abstraction, while used in another—excessive regulation of students’ behaviour may not always be in the school’s best interests—it may refer to a grammatical metaphor. Another complication is that technical and institutional terms are defined and explained by grammatical metaphor, but, once established, these meaning carry on as abstractions in their own right. Martin’s solution to this analytical problem is to treat these terms as metaphorical when they first appear and as technical abstractions further on.

Another categorization is made by Veel (1997). He combines an analysis of abstraction with an analysis of grammatical metaphor into the joint concept of ‘virtual entities’. They are joined by the characteristic of not being...
tangible. At the same time, they are separable in the sense that grammatical metaphors can be unpacked, while abstractions cannot. Veel asks rhetorically: “What, for example are the congruent versions of abstractions such as force, energy and principle? What are the more ‘childlike’ ways in which they can be represented to young learners?” (Veel, 1997:184).

I have chosen to include only nominalizations consisting of verb → noun, and adjective → noun, in my analysis of grammatical metaphor. Most grammatical metaphors belonging to these categories are abstract. In the analysis used in the thesis (see section 4.9-4.12), I have chosen to regard the grammatical metaphors as one type of abstract words.

Abstraction and technicality are in my opinion not necessarily linked to each other. At a referent level there are referents which are abstract but not technical, e.g. love, and referents which are specific/concrete and technical, e.g. tuning fork. However, a high degree of one of these qualities often co-occurs with a high degree of the other.

Grammatical metaphors are important in the construction of technicality. Schleppegrell (2004) describes how grammatical metaphors are central in the construal of technicality when it comes to ideational meaning. But again, the relationship between technicality and grammatical metaphor is not a strict one-to-one relationship when it comes to a referent level. There are referents which are technical, e.g. heifer, but neither abstract nor grammatical metaphors.

In my analysis of referents in the textbook texts, the category in focus is abstraction. A high degree of grammatical metaphors and technical referents often co-occurs with a high degree of abstraction. The concepts of abstraction, grammatical metaphor and technicality are nonetheless analyzed as independent of each other.

4.7 Students’ development of abstraction and grammatical metaphor during the years of schooling

Halliday and Matthiessen (1999) suggest that there is a movement from the basic specificity to generalization to abstraction to metaphor in childrens’ linguistic development. They maintain that this development is essential in the progress towards being able to read and produce adult specialized discourse.

The first step is that of generalization, that is, naming general classes instead of specific individuals. This step takes place during the child’s second year. Generalizations make it possible to construct hierarchies of classes and to name other kinds of elements, processes and qualities which can only be used as “common” terms.
The second important step in this progression is that of abstraction. Halliday and Matthiessen associate the ability to use abstract meanings with the beginning of school and learning to read and write in literate societies. They underline that it is not only the written medium that relies on abstraction, but “it is the whole world of educational knowledge that demands such abstractness in meaning. Consider examples taken from primary text books such as *Some animals rely on their great speed to escape from danger.* or *The time taken by earth to rotate once on its own axis is a day.* (Halliday & Matthiessen, 1999:616). The knowledge presented is not necessarily new to the students. The novelty is the reconstruction of the knowledge in a way that is systematically organized and presented in a more abstract way.

Halliday and Matthiessen put forward that there is a further reconstruction of knowledge as technical knowledge. This transition takes place when students move from primary to secondary school and learn to organize knowledge into disciplines. The most important tool for this reconstruction of knowledge as technical is grammatical metaphor.

The elements are processes and qualities that have been metaphorically reconstrued to become participants: rotation, magnitude, enlargement, and so on: together with the relation of identity construed as a process by the verb be. (Halliday & Matthiessen, 1999:617)

Martin (1997) claims that the educational implications of grammatical metaphor are immense since there is a development from non-metaphorical uses, in children’s texts, to grammatical metaphor as a common feature of adult discourse. Grammatical metaphors develop later from three different perspectives: they tend to unfold later in text (logogenesis); they tend to develop later in the maturation of the individual (ontogenesis); and they tend to evolve later in history of a culture (phylogenesis). When it comes to the move from non-metaphorical to metaphorical texts, this transition happens somewhere between primary and secondary school, at the same time as school-texts develop more disciplinary specific features. Martin (1997):

The move from non-metaphorical to metaphorical text is in some sense symbolized across literate cultures by the separation of primary and secondary schooling and the drift from thematically organized multidisciplinary units of work in primary school to strongly classified discipline specific work in secondary school. (Martin, 1997:30)

In another text, Martin describes junior-secondary school (Grades 7-10, with students typically aged 12-16) as a period in which students are required to read and write discipline-specific discourses of science and humanities (Martin, 1993:221). For example in the Swedish school’s grades 7-9, this is the first time students encounter course work that is more specifically organized by discipline (history, social studies, religion, biology, physics etc.).
Grammatical metaphor is in this sense a dimension of language development in later childhood. Derewianka (2003) shows in an investigation that even though there are instances of grammatical metaphor in young children’s language, these instances are either formulaic or more conventionalized grammatical metaphors as *trailers* and *gateways*. Only at the age of 9-10 is there a substantial increase of children’s use of grammatical metaphor.

4.8 Ways of expressing abstraction in different subject areas

According to Schleppegrell (2001), some features of how to read and write are general across all subject areas in the context of schooling. She states that the context of schooling in general “requires that students read and write texts that present information authoritatively in conventionally structured ways.” The reason for this similarity across subject areas and genres is explained with reference to register. In defining register as the constellation of lexical and grammatical features that characterizes particular uses of language, she states that:

> Registers vary because what we do with language varies from context to context. The choice of different lexical and grammatical options is related to the functional purposes that are foregrounded by speakers/writers in responding to the demands of various tasks. (Schleppegrell, 2001:432)

Schleppegrell further suggests that it is possible to observe differences between registers through choices of words or phrases and in the way clauses are constructed.

To describe the register features of the language of schooling, Schleppegrell (2001) relies on research that shows that certain features occur in academic texts more often than in ordinary conversation. The register features she describes are most characteristic of the more advanced school-based genres but can be traced in the earliest academic genres in primary school.

<table>
<thead>
<tr>
<th>Lexical features</th>
<th>Spoken interaction</th>
<th>School-based texts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lexical choices</td>
<td>generic</td>
<td>specific, technical</td>
</tr>
<tr>
<td>Lexical density</td>
<td>sparse</td>
<td>dense, elaboration of noun phrases through modifiers, relative clauses, and prepositional phrases</td>
</tr>
</tbody>
</table>

Table 10. *Register Features of Spoken Interaction and School-Based Texts, from Schleppegrell, 2001:438*
### Subjects

| Pronominal, present of known participants | Lexical, nominalizations and expanded NP’s |

### Grammatical strategies

<table>
<thead>
<tr>
<th>Segmentation</th>
<th>Prosodic segmentation: structure indicated prosodically</th>
<th>Sentence structure: structure indicated syntactically</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mood</td>
<td>Varied, attitude conveyed prosodically</td>
<td>Mainly declarative, attitude conveyed lexically</td>
</tr>
<tr>
<td>Clause linkage and conjunction strategies</td>
<td>Clause chaining with conjunctions, information added in finite segments, use of many conjunctions with generalized meanings</td>
<td>Clause-combining strategies of embedding, use of verbs, prepositions, and nouns to make logical links conjunctions has core (narrow) meanings</td>
</tr>
<tr>
<td>Organizational strategies</td>
<td>Emergent structure, clause themes include conjunctive and discourse markers that segment and link part of text</td>
<td>Hierarchical structure, using nominalization, logical links indicated through nominal, verbal and adverbial expressions, and thematic elements that structure discourse</td>
</tr>
</tbody>
</table>

Although there are obvious differences between the registers of different subject areas in school, Schleppegrell (2001) suggests that the linguistic features described in the table above are common for all school-based texts. The main function of these linguistic features is to present information in highly structured ways that makes the author seem assertive and knowledgeable. Even though academic registers serve their purpose, they may also present specialized knowledge in ways unfamiliar to students, and such a situation may be challenging.

Comparing school-based language in general to spoken interaction, different genres within different subjects are more similar to each other than to spoken interaction, for example. However, when the perspective is narrowed, the differences between language uses in different subject areas stand out. Differences in how to read and write in different disciplines increase in secondary school.

It is important for students to develop academic register options in different disciplines because particular grammatical choices are functional for constructing the kinds of knowledge typical of a discipline. (Schleppegrell, 2004:137)

Abstraction stands out as one general feature of school-based language in general, achieved through linguistic features such as density and nominalization (mentioned in table 10). But there are also differences in how abstraction is created in the different subject areas.

Several researchers (e.g. Wignell, 1998, Halliday & Martin, 1993, Lemke, 1990) present a general picture of the differences in perspective between science and the humanities. The premise is that the humanities and science present their construction of the world in different ways and that different
linguistic resources are employed to achieve this worldview. Lemke (1990:158) describes the language of science teaching as “used to express relationships of classification, taxonomy, and logical connections among abstract, or generalized, terms and processes.” He compares this form of language to the language of history and literature which is more narrative in character and where the focus is on relationships between time, place and manner. The persons and events in the literature and history texts are often specific, regardless of whether they are real or fictional.

Science is built through technicality where experience is reconstructed through technical terms which are taxonomically related. Humanities on the other hand, use abstraction rather than technicality to interpret the world.

4.8.1 Abstraction in literary texts

Knapp and Watkins (1994:6) describe the function of literary text as “reflect and interpret individual and social life, whether it be real or imaginary. Literary texts can deal with everyday experience in a way that lifts readers beyond the everyday”. Bearing in mind this description of literary texts as focused on everyday experience, it is not surprising that it is difficult to find a description of how abstraction and technicality are realized in literary texts. When describing the genre of narrating, Knapp and Watkins point out the setting of the characters in a particular time and place, as a typical orientation stage of narrative genres.

A key characteristic for all text types in the genre [of narrating], however, is the requirement to orient or introduce the reader/listener to the people, time, and place in the story. (Knapp and Watkins, 1994:140)

Describing specific, real or imaginary, characters and situating them in time and place are typical features of concreteness.

Even though Eggins et al. (1993:82) focus on a description of the discourse of history, they mention some of the characteristics of narrative texts when discussing a text of lower grades of schooling. “It is concerned with individual human Actors… The text contains relatively few nominalizations …” These characteristics can be related to abstraction.

In this context they also point in the direction of concreteness as a typical characteristic of narrative texts:

Such biographical sketches are essentially story-like. They are concrete rather than abstract, dealing with relations of time and cause between events that took place in the past, and focusing on the people who did things and had things done to them. (Eggins et al. 1993:83)
4.8.2 Abstraction in social science texts

This section will mainly describe abstraction within the subject area of history. This might seem imbalanced in relation to the fact that the texts called social science text in my textbook corpus are about religion, geography and civics as well as history. The reason for the focus on research on history texts is simply that it is the area in which most work has been done.

The subject of history is about interpreting. And abstraction is a salient feature in this interpreting. Writing history texts is about generalizing and abstracting from specific events and single facts.

The non-agentive, abstract constructions that construe events as participants in clauses that incorporate movement through time or causality enable the historian to construct historical explanations that generalize human experience. (Schleppegrell, 2004:138).

Eggins et al. (1993) point to the fact that even though the overall intention in the curriculum could be to describe ‘the story of the people’ this is hardly what is achieved in history textbooks. They suggest that in a process of interpreting “people are effaced, actions become things, and sequence in time is replaced by frozen setting in time.” (Eggins et al. 1993:75)

Since abstraction is the more salient aspect in history texts and less so technicality, these texts may on the surface look more accessible than they really are. Martin (1993b) suggests that these texts may pose greater difficulties to students than the more technical, but less abstract, science texts. English and history teachers do not usually make their students pay attention to nominalizations and abstractions in the same way science teachers teach concepts and terms that make up the scientific discourse.

Schleppegrell (2004) gives an overview of grammatical features in a register of history. Different genres may however use the register features in different ways when constructing situational contexts. The situational expectations in the table below correspond to field, tenor and mode.

<table>
<thead>
<tr>
<th>Situational Expectations (Context)</th>
<th>Grammatical Features (Register)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Display knowledge</strong> by presenting and interpreting historical events (ideational metafunction)</td>
<td>Mainly material processes, with relational processes to construct description and background and verbal and mental processes to construct points of views. A continuum from person/individual to abstract/institutional. Logical relationships of temporality, causality.</td>
</tr>
<tr>
<td><strong>Be authoritative</strong> be recording, interpreting, judging (interpersonal metafunction)</td>
<td>Implicit modality. Appraisal through evaluative lexis.</td>
</tr>
</tbody>
</table>

Table 11. Register Features in History Discourse: Resources for Interpreting Experience, from Schleppegrell, 2004:128
Several investigations show that abstraction is gradually developed through different stages of schooling, as a tool for interpreting experience (e.g. Veel & Coffin, 1996, Coffin, 1997). Coffin, for example, shows that history genres move from construing the past as a story with focus on specific, concrete events developed over time, to construing the past as an argument, with focus on an abstract thesis, related to each other in a text-internal time. In an investigation of writing genres in history in school, Veel and Coffin (1996:191) show that skills like ‘record’, ‘sequence’ and ‘list’ are important at earlier stages. Later on abilities such as generalizing, discussing cause/effect and reasoning are privileged in a context of schooling. Veel and Coffin state that this pattern of privileged and privileging meanings determine the student’s linguistic path through the history subject.

Coffin (1997) develops a description of the relationship between genre, degree of abstraction and the time line in the texts. She makes a basic distinction between narrative and argumentative genres in school history. The narrative history genres (different types of recount and account) are sequentially organized along a setting in time. The argument history genres (explanation, exposition, challenge and discussion) are rhetorically organized with an internal text time.

Eggins et al. (1993) describes a similar development ranging from more story-like history texts to the more abstract.

As far as people are concerned we need to move from individuals (e.g. Michelangelo) to generic classes (e.g. artists, sculptors and scholars in general). We may even want to eliminate people altogether. This we do find, especially in the introductory sections of chapters. In the Introduction to the Classical Renaissance the only people left were historians, sometimes left implicit, and usually in agentless passives (The term Classical Renaissance is often applied to in this period.). (Eggins et al., 1993:90)

Developing abstract language is a necessary part of this linguistic path (Schleppegrell, 2004). In this development, nominalization or other types of ideational grammatical metaphor are an important part of this transition towards abstraction. Schleppegrell (2004:130) states that abstraction achieved through grammatical metaphor presents the kinds of meaning which are typical to history in a functional way. She exemplifies this by stating that human actors are presented as generalized participants (e.g. Southerners, settlers) and sequences of events are presented as a single participant (e.g. Reconstruction). ‘Actors’ in these texts are also abstract participants such as institutions (e.g. slavery), places (e.g. the territory) and ideas (e.g. loyalty). All these abstract actors in the text make it difficult to recognize the real
historical persons and “at the same time they enable priority to be given to
generalized movements, events, and debates, rather than to individuals.”
(Schleppegrell, 2004:130)

Abstraction is also construed in history texts, as well as in school-based
texts in general, by removing agency. Abstract participants, relational proc-
tesses and other resources decrease active participants in texts.

4.8.3 Abstraction in natural science texts

Learning science involves developing new ways of thinking about and organ-
izing the world. Veel (1997) describes science literacy not only as learning
how to read and write science texts but also as taking part of an apprentice-
ship into how to describe the world within a scientific discourse. This form
of language use enables certain ways of thinking but hinders, or at least mar-
ginalizes, other ways. Veel suggests that

changing configurations of grammatical features lead students away from the
kinds of meanings which are linked to the here-and-now towards the abstract,
technical and ‘transcendental’ kinds of meaning we expect of adult, educated
discourse. (Veel, 1997:188)

Schleppegrell (2004) describes some of the general grammatical features of
a register of scientific discourse in table 12. The situational expectations in
the table below correspond to field, tenor and mode.

Table 12. Register Features in Science Discourse: Resources for Theorizing Experi-
ence, from Schleppegrell, 2004:118

<table>
<thead>
<tr>
<th>Situational Expectations (Context)</th>
<th>Grammatical Features (Register)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display knowledge by classifying thing, explaining and building theories</td>
<td>Technical terms Expanded nominal groups with multiple modifiers Material processes construct events and happenings; relational processes construct description, definitions, and conclusions</td>
</tr>
<tr>
<td>Be authoritative by presenting conclusions in “objective” ways</td>
<td>Evaluation through objective modality that suppresses agency</td>
</tr>
<tr>
<td>Structure texts in expected ways that build up information step by step</td>
<td>Grammatical metaphor enables thematic progression from clause to clause</td>
</tr>
</tbody>
</table>

If history texts use abstraction as a tool to organize interpretation, technical-
ity is employed in science in order to described experience. Technical terms
are important to science since they condense information, which enables
analysis and theory to develop. But the use of technical terms has further
consequences. Martin (1993b) states that a special feature of technical terms
is that they organize the world in a different way than the everyday terms do. The technicality in technical terms is also dependent on the way they imply taxonomies. In this sense it is necessary to be familiar with the specialized taxonomies and the principles that led to their construction, in order to understand the technical terms.

However, science texts do not lack abstractions. When the focus of science texts are removed from the present time and place, abstractions become increasingly important, according to Veel (1997). This is also related to a shift from one genre to another.

In moving from procedural recounts (doing science) to explanations, for example, students are required to move from the recount of specific events and specific objects in specific places and times, all of which are assumed to lie within students’ own experience, to a generalized account of objects and events in non-specific place and time which is often outside students’ experience. Such a move is essential for the construction of scientific knowledge, but it is not always an easy one for the students to make. Many teachers have reported that students are able to write accurate recounts of experiments and observations, but have great difficulty in making generalized conclusions on the basis of what they have done and observed. (Veel, 1997:174)

Abstraction in science text is often achieved through grammatical metaphor.

4.9 Criteria for the analysis of abstraction

4.9.1 The unit for analysis

In the literature discussed so far in this chapter, abstraction is predominantly described as a characteristic of nouns. The examples mentioned in the earlier research are about persons and things and their degree of abstraction. Apart from a semantic analysis of abstraction of nouns, some structural elements that increase abstraction in texts are mentioned. Grammatical metaphors are the most important of these elements and were described separately in section 4.4.

Another issue is that of alternatives to nouns as units for analysis. One alternative unit that has been used is the clause (e.g. Lindeberg, 1985). However, this alternative poses the problem of contradictory elements when it comes to abstraction. The same clause could contain abstract as well as concrete elements. An alternative would be the verb process. Possibly, material processes such as jumps in sentences like The boy jumps in the puddle, could be regarded as concrete. In the same way, the mental process thought in the sentence John thought about his childhood, could be regarded as more abstract. Nonetheless, classifying processes as specific/concrete or abstract seem to pose a greater analytical problem than classifying nominal phrases.

Yet another mode of analyzing abstraction is proposed by Biber (e.g. 1991). Within a multi-dimensional analysis of text he characterizes one clus-
ter of linguistic features as contributing to an abstract style. The features involved are grammatically defined and consist of conjuncts, agentless passives, past participial adverbial clauses, by-passives, past participial post-nominal modifiers and other adverbial subordinators.

However, the importance of vocabulary could be regarded as a motive for analyzing lexical rather than structural units. Schleppegrell (2001) argues that there are arguments for the importance of vocabulary: lexical choices realize the ideational content of the text and it is through lexical choices that students situate themselves as members of a particular discourse community. The intuitive understanding of the phenomena of abstraction harmonizes better with nominal phrases rather than with verbal processes, especially the features of singularity and tangibility.

The characteristics of abstraction described in the section 4.3.1-4.3.4 seem to refer to nouns rather than to any other unit. Of course this could be a consequence of a traditional view on nouns as carriers of abstraction. However, I have no trouble accepting this focus on nouns. Nevertheless, I would like to emphasize the difference between referential expressions and referents. A referential expression is a linguistic unit that is used to refer to something outside language. The entity referred to is the referent. Abstraction is about referents, not about referential expressions. A typical characterization of abstraction as tangibility is irrelevant to apply to linguistic expressions such as my red bike or an idea, but relevant to what the words refer to; the actual bike and idea.

Since the focus of this study is on abstraction in texts, the content of these texts and the text worlds created in them are the centre of primary attention. In this context I will mainly concentrate on the referents, understood as the things, objects and phenomena referred to by the nominal phrases of the texts.

4.9.2 How to measure abstraction in referents

There are attempts to identify the degree of abstraction in referents through their linguistic form. Miik (2001:70-71) measures the abstraction in Estonian texts by assessing abstract suffixes (-us, -ism and -mine). This analysis is however combined with expert ratings of noun abstractness. In Swedish there have also been discussions whether suffixes such as -else automatically makes a noun abstract (Danielson, 1975). The consensus when it comes to Swedish seems to be that there is no direct relation between the linguistic form and the degree of abstraction.
Suffixes which in one case yield an abstract noun (e.g. böj-else), yield a concrete noun (e.g. rök-else) in another context. The examples are numerous. (Danielson, 1975:112)\textsuperscript{17}

Any automatic identification of abstract referents by their linguistic form is thus not an option in Swedish.

Another feature of abstraction is the dependence on context. The same linguistic expression can in one context refer to a more specific and concrete referent while in another to a more generalized or abstract.

(1) The water in the glass had a taste of chlorine.
(2) Water is the most important substance on earth.

*Water* in the first sentence refers to something fairly limited in space and in that sense concrete and specific. In the second sentence *water* refers to the generalized substance and has in that sense a rather high degree of generalization. The degree of abstraction in referents is therefore most correctly analyzed in its context.

4.9.3 Criteria for the analysis of abstraction

One of the central issues in the task of establishing criteria for an analysis of abstraction has been the overlapping scales of specific-generalized and concrete-abstract. For the sole purpose of discussion, these two scales could of course be combined in a fourfold-table.

![Fourfold-table based on a combination of the scales concrete-abstract and specific-generalized.](image)

\textsuperscript{17} “Suffix, som i ett fall ger ett abstrakt substantiv (t ex böj-else), ger i ett annat fall ett konkret substantiv (t ex rök-else). Exemplet kan mångfaldigas.” (Danielson, 1975:112)
Square 1 contains specific and concrete referents, e.g. the boy in the sentence *The boy ate his breakfast*. Square 2 contain specific and abstract referents, as *idea* in *My idea was better than hers*. The referents in square 3 are concrete and generalized, an example is generic uses of a species. *The Icelandic horse* in the following sentence is an example of this: *The Icelandic horse usually weighs between 300 and 450 kilos*. Finally, square 4 hold generalized and abstract referents such as *ideologies* in *Political ideologies pose a threat to the current regime*. The distinction between the scales of concrete-abstract and specific-generalized is not always very clearly made in literature about abstraction in textbook texts. Some texts seem to use one of the scales while others use both of them together.

However, in some contexts, a combination of the scales of specific-generalized and concrete-abstract might serve a purpose. Generalization can also be regarded as an entry way to abstraction. Wignell (1998) suggests that:

> Put simply, abstraction involves moving from an instance or collection of instances, through generalisation to abstract interpretation. (Wignell, 1998:301)

An example of texts at a specific, a generalized and an abstract level, could be the difference between a text about a specific girl, a text about girls in general and a text about childhood. Eggins et al. (1993) points to a development of history texts where the texts gradually move away from being stories. One way of achieving this is to replace individuals with generic classes of participants. They exemplify this transition towards increased generalization with sentences focusing on specific persons, such as “Michelangelo was another outstanding man of Renaissance…Initially he concentrated on sculpture”, which are replaced with more generic descriptions such as “The painters of the Renaissance turned to the classics for inspiration”.

> The cumulative effect of these various forms of nominalization is to remove the story from history. For the historian, history involves a number of successive periods in which similar kinds of things go on and differ from what went on in periods before and after. Thus it is doings, not people, that begin, spread and die out. And generic classes of people or doings that act on other things. (Eggins et al. 1993:81)

In school texts the step from the specific to the generalized seems to be an important move towards more specialized texts. Also, in the area of science, specificity vs. generalization seems to be important. As mentioned earlier, Veel (1997:174) describes, in a survey of science genres, a shift from recounts about specific events and objects in specific times and places, to explanations where the events and objects are generalized and in non-specific place and time. This shift towards a higher degree of generalization is essen-
tial for the construction of science, but often a difficult one for students to make.

With this background, I find it important to catch characteristics from the scale of specific-generalized as well as the scale of concrete-abstract in an investigation of abstraction in textbook texts. Even though abstraction in general is opposed to concreteness, earlier research suggests that the move from specific to generalized also is important in the transition towards more specialized texts.

Using the fourfold-table above as basis for a classification of abstraction would result in four different categories; the concrete-specific, the concrete-generalized, the generalized-abstract and the abstract-specific. The last one, the abstract-specific, seems to me superfluous. The specificity does not affect the abstraction in the same way it affects the concreteness. There is no important difference in abstraction between a specific, abstract referent such as idea, and a generalized, abstract referent as ideas. At least, the difference is smaller than the difference between a specific, concrete referent, such as my kerry blue terrier, and a generalized referent such as the species of dogs. Even though there is a continuum between these two examples (my kerry blue terrier, kerry blue terriers in general, terriers in general, dogs in general, mammals) there is an important difference between the specific terrier and the group of terriers that has to do with the specificity in the former. There are also analytical motives for choosing specificity rather than concreteness as the central feature in the categories. Analytically the border between something specific/singular and something generalized/plural is easier to identify than the border between something concrete and something generalized.

In this study, generality will be regarded as a step towards abstraction. The further analysis will then start out from three levels of abstraction with specific, general and abstract referents. The analysis in this study brings together the differences between concrete and abstract as well as between specific and generalized. Generalization will be regarded as an intermediate level between specific and abstract and as an entrance to abstraction. The category of specific referents (1) will only hold specific and concrete referents. The category of general referents (2) will thus hold groups of specific and concrete referents, as well as generalized concrete referents. Finally, the category of abstraction (3) will contain abstract referents and generalized abstract referents. This is achieved through a three-fold analysis of abstraction\(^{18}\). Referents include dates, properties, places and metaphorical uses of referents.

\(^{18}\) The choice of degrees of abstraction is made to be relevant to the texts in question. Naturally, other ways of classifying abstraction can be more appropriate to other kinds of texts, e.g. Stolze, 2003.
The degrees of abstraction used are:

1. **specific referents** – specific and concrete persons and objects, specific points in time and location.

2. **general referents** – groups of specific and concrete persons and objects, groups of places and dates, generalizations of persons and objects, species, types of things.

3. **abstract referents** – abstract concepts, properties, events, metaphorical uses of referents.

One of the most important features of the analysis of abstraction in the following chapters is that every referent is analyzed in its context. The analysis of whether a participant is specific, general or abstract is thus made intratextually. The same referential expression can refer in one context to a specific referent and in another context to a general one, that is, the researcher’s reading of the text has interpreted for example the notion *hockey rink* in the text below as a generalized referent since it refers to hockey rinks in general. Hypothetically, the same word used in a different context, as *He practiced skating every day on the hockey rink nearby*, could naturally refer to a specific hockey rink, which would be regarded as a specific referent.

Every analysis of natural linguistic data entails its specific problems in terms of fitting the reality to a structured form. Naturally, there are borderline cases and problematic references in the specific, general and abstract referents. To exemplify the three degrees of abstraction and some borderline cases of analysis the following text will be used.

**Law and Justice**

(1) In all situations it must be clear what the rules are. (2) This is true in the hockey rink, in traffic or in society in general. (3) The chapter Law and Justice discusses the rules which we follow when living together.

(4) He never knew where the blows came from, but all of a sudden he was lying down on the ground, defenseless. (5) Quick hands searched through his pockets. (6) The wallet and the keys disappeared. (7) Someone unbuttoned his watchstrap and then the watch was gone. (8) The hands got harder, rougher but could not find anything more. (9) He heard muttered curses and was kicked in the side. (10) Then a blow and a pain in the head and everything grew dark… (Långström et al., 1991:56-57)

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19 "Lag och rätt

(1) I alla sammanhang måste det finnas klara regler för vad som gäller. (2) Det kan vara på ishockeybanan, i trafiken eller i samhället i stort. (3) I kapitlet Lag och rätt behandlas de regler, som bestämmer hur vi ska leva tillsammans i samhället.

(4) Han märkte aldrig varifrån slagen kom, men plötsligt låg han där på marken, försvarslös. (5) Snabba händer letade igenom hand jackfickor. (6) Plånbok och nycklar försvann. (7)
Using the classification above, the heading and the first sentence contain only abstract referents; law, justice, situations, rules. These referents are entities that can neither be seen nor touched.

The following sentence is mainly about generalized referents such as hockey rink, traffic and society. The second paragraph contains several specific referents, referents that can be seen or touched and are concrete and singular; he, ground, wallet, watchstrap, the watch, head.

4.9.4 A few problematic borderlines

The examples of analysis from these first sentences are relatively unproblematic. But how about blows in sentence (4)? The blows occur at a given movement and can, at least to the victim, be felt. These qualities point in the direction of specificity. But they are not tangible and describe more of an event than an object. In the analysis they have been analyzed as abstract together with all other actions.

Another feature of the definition of abstraction outlined above that is open to discussion but not exemplified in the text is the analysis of points in time and place as specific. This has to do more with the consequences of markers of time and place than the actual essence of these markers. Time in itself is not especially concrete and specific. But markers of distinct points in time are typical of specific and concrete referents. Specific and concrete referents are always situated in time, whether it is a text-world internal time or a time outside the text.

Referents in plural form another problematic border. The pockets in sentence (5) are undoubtedly concrete; they are touchable and possible to see, but they are not singular. Plurality in general could be seen as a first step towards generalization. 20

The students that read the text about “Law and Justice”, read a text about molluscs in general in a Biology class during the same period.

The bivalves are well protected between two halves of shell that are joined together by a hinge and by strong muscles. (Fabricius et al, 1995:78-79) 21

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20 Sandqvist (1995) shows in a comparison between Swedish history textbooks from 1950 and 1980 that the books from 1980 have fewer references to individuals than the textbooks from 1950. In the textbooks from 1980 the references to groups of people are more common, especially the focus on non-privileged groups.

21 "Musslorna sitter väl skyddade mellan två skalhalvor som hålls ihop av ett gångjärn och av starka muskler." (Fabricius et al, 1995:78-79)
The bivalves in the text are described in general; they are not situated in time or place. To some extent the bivalves refers to a group consisting of all possible specific bivalves taken together. But what are in focus in the text are the common generalized characteristics of bivalves, rather than the collective of individual animals. An analysis of bivalves in this text as specific therefore seems too broad. This is a typical example of the need for an intermediate level, between the specific and the abstract. The bivalves in the text above are analyzed as a generalized referent.

But where is it reasonable to draw the line between the different kinds of plurality? There is a difference in specificity between for example my two sons, my children, my family, my relatives, my acquaintances, the citizens of Uppsala, the Swedish people, the Europeans and all human beings. It is more of a gradual difference than a difference in quality. The way out of this problem has been to analyze all referents in plural as belonging to the intermediate category of “groups of specific and concrete referents and general referents”. Both the concrete but not specific pockets and the generalized bivalve, are therefore analyzed as belonging to the category of general referents. This first categorization is intended to describe the overall levels of abstraction. Therefore, it does not reflect all the qualities of the referents. Further on, section 6.2, the analysis of the functions of shifts between abstraction levels, will describe in more detail qualities such as those that distinguish plurals of specific objects from generalizations.

4.10 Criteria for the analysis of grammatical metaphors

In the analysis made here, I will exclusively focus on grammatical metaphors of transitivity and, among them, nominalizations. Halliday (1994) underlines that however far one may unpack ideational metaphors, the interpretation must analyze each instance as it is. My analysis of grammatical metaphors in the Swedish textbook texts is based on the context, as was my analysis of the degree of abstraction.

Eggins et al. (1993) presents a table of possible congruent and metaphorical realizations.

Table 13. from Eggins et al., 1993:93

<table>
<thead>
<tr>
<th>Meaning</th>
<th>Everyday language</th>
<th>Metaphorical language</th>
</tr>
</thead>
<tbody>
<tr>
<td>participant</td>
<td>noun</td>
<td>-</td>
</tr>
<tr>
<td>process</td>
<td>verb</td>
<td>noun</td>
</tr>
<tr>
<td>quality</td>
<td>adjective</td>
<td>noun</td>
</tr>
<tr>
<td>logical relation</td>
<td>conjunction</td>
<td>noun, verb, preposition</td>
</tr>
</tbody>
</table>
As mentioned in section 4.6 and table 9, Martin (1997) outlines a framework for classifying types of things that combines concrete and abstract things with metaphorical things. In this framework a thing can be classified either as an indefinite pronoun, or as a concrete, abstract or metaphorical thing. However, as mentioned in section 4.6, Martin admits that it is problematic to analyze nouns as either abstractions or grammatical metaphors. Also as mentioned, Martin’s solution is to treat these terms as metaphorical when they first appear, but as technical abstractions once they have been established.

My strategy in dealing with this issue is to take a broader analysis of abstraction as a starting point and then in a second step move on to an analysis of grammatical metaphor as one type of abstract referents.

Table 14. The analysis of abstraction in correlation to the analysis of grammatical metaphor.

<table>
<thead>
<tr>
<th>Specific REFERENTS</th>
<th>he, wallet, radiator</th>
</tr>
</thead>
<tbody>
<tr>
<td>General REFERENTS</td>
<td>traffic, population</td>
</tr>
<tr>
<td>Abstract non-metaphorical</td>
<td>law, justice</td>
</tr>
<tr>
<td>Abstract metaphorical</td>
<td>snoring, neutralization</td>
</tr>
</tbody>
</table>

The criteria I have used in an analysis of grammatical metaphor are:

• the analysis is based on a co-existence of a congruent and a metaphorical meaning
• the analysis is based on the meaning in context
• the analysis only includes the transitions from verb to noun, and adjective to noun

The examples in table 14 are all from the textbook texts in the study, where, in their contexts, they had the abstraction status described in the table.

4.11 Criteria for an analysis of technicality

The least elaborated of the three parts of the analysis is that of technicality. The analysis of technicality presented in the thesis is from one of the general categories of text analysis made in the project Students’ encounters with different texts in school and was therefore carried out jointly by all the co-workers in the project.

The analysis of technicality is perhaps more about familiarity than technicality in the sense the term is used within the SFL framework. In our analysis of technicality, referential expressions are qualitatively assessed as part of a technical discourse or part of everyday language. The analysis is based on
an approximation of what could be assessed as technical or everyday language from the perspectives of students at the relevant grade level.

The analysis of technicality is made independently of the analysis of abstraction and grammatical metaphor. In other words, specific, general and abstract referents can all be assessed as everyday or technical.

4.12 An overview of the analytical entrances to abstraction, grammatical metaphor and technicality

Table 15 combines the different analytical entry points described earlier in this chapter. The focus is on abstraction; metaphorical and technical characteristics of the referents are seen as independent of the degree of abstraction.

Table 15. The analysis of abstraction, grammatical metaphor and technicality.

<table>
<thead>
<tr>
<th>Specific</th>
<th>General</th>
<th>Abstract</th>
</tr>
</thead>
<tbody>
<tr>
<td>non-technical</td>
<td>non-technical</td>
<td>non-metaphorical</td>
</tr>
<tr>
<td>technical</td>
<td>technical</td>
<td>technical</td>
</tr>
<tr>
<td>he, wallet</td>
<td>traffic, bivalves</td>
<td>law, justice</td>
</tr>
<tr>
<td>radiator, flask (chem.)</td>
<td>population</td>
<td>judicial system</td>
</tr>
<tr>
<td>technical</td>
<td>non-metaphorical</td>
<td>snoring, strength</td>
</tr>
<tr>
<td>abstract</td>
<td>non-technical</td>
<td>neutralization, destillation</td>
</tr>
<tr>
<td>non-technical</td>
<td>technical</td>
<td>technical</td>
</tr>
<tr>
<td>general</td>
<td>general</td>
<td>general</td>
</tr>
<tr>
<td>non-technical</td>
<td>technical</td>
<td>technical</td>
</tr>
<tr>
<td>traffic, bivalves</td>
<td>population</td>
<td>general</td>
</tr>
<tr>
<td>population</td>
<td>population</td>
<td>population</td>
</tr>
</tbody>
</table>

Chapter 5 will describe and discuss the degrees of abstraction and chapter 6 describes the shifts between abstraction levels and the different patterns of abstraction in the textbook texts in the corpora. This analysis will start out from the analytical entry points described in table 15.
CHAPTER 5
Degrees of abstraction in the textbook texts

In this chapter, the criteria for different degrees of abstraction from chapter 4 is used in an analysis of the textbooks texts from three different grade levels and three different subject areas. The results from the analysis are discussed from the perspective of the different subject areas and from the perspective of different school grade levels. An analysis of grammatical metaphor and technicality is added to the analysis of abstraction.

5.1 Levels of abstraction in texts

Using the distinction between specific, general and abstract described in chapter 4, this chapter will focus on the levels of abstraction in textbook texts with different characteristics. The aim described in chapter 1 concerned the transition towards specialized language through an investigation of abstraction in textbook texts. This aim, mentioned in chapter 1, can be divided into three minor questions concerning

- the texts’ degree of abstraction in relation to different school subjects
- the texts’ degree of abstraction in relation to different grade levels
- the texts’ degree of abstraction in relation to textual features such as technicality and grammatical metaphor

The analysis was carried out in accordance with the criteria for different degrees of abstraction presented in chapter 4. All the referents in the 58 texts were classified according to the criteria. Percentages of referents of different degrees of abstraction were also calculated.

The analysis shows that very few texts contain referents of only one kind. Only five texts out of 58 lack specific referents entirely. These five texts were all encountered in natural science classes. The remaining 53 texts had at least one instance of specific referents, one instance of general referents and one instance of abstract referents. This gives the impression that an understanding of texts as being abstract or specific/concrete is an overly sweeping and general statement. However, there is a noticeable difference between
different texts with respect to abstraction, and one of the aims of this study is to give a nuanced description of these differences.

Figure 7 illustrates the differences between degrees of abstraction in subject areas. The columns in the figure are the averages of the percentages of abstraction in every single text. Calculations on the difference between levels of abstraction within all the referents in, for example, Swedish literary texts, are fairly consistent with an average of the percentages in every single text.\(^{22}\) In the figure, no difference is made between different grade levels.

The overall difference in degree of abstraction, between the Swedish literary text and the social science texts, is significant at the level of 1\%.\(^{23}\) The difference between the referents in the social science texts and in the natural science texts, is also significant at the level of 1\%. Finally, there is a significant difference, at the level of 1\%, between the degree of abstraction between the referents in the Swedish literary texts and the natural science texts.

A conventional comprehension of abstraction in texts from different school subjects would predict that the literary texts read in Swedish literature classes would contain more specific referents than the content area texts from social sciences and natural sciences. The same understanding also supposes that texts read in natural sciences will be more abstract than the ones

\(^{22}\) The second kind of calculation has been used in the chi2-tests of significance in the differences between texts from different subject areas and school years.

\(^{23}\) The significance of the differences between different degrees of abstraction and different degrees of technicality is tested with a chi2-test (http://schnoodles.com/cgi-bin/web_chi_form.cgi).
read in social sciences. This conventional comprehension is to some extent confirmed by the analysis in this study.

The largest difference in levels of abstraction concerns specificity. As shown in figure 7, while the Swedish literary texts have an average of 64% specific referents and 26% of the referents in the social science texts, only 3% of the referents in the natural science texts are specific. Besides the decrease of specific referents in the scale Swedish literary texts → social science texts → natural science texts, there is a corresponding increase in generalized referents. While 26% of the referents in Swedish literary texts are generalized, 47% of the social science texts are, and the natural science texts display an average of 72% of generalized referents. An overall counting of referents in texts gives a picture of predominantly specific referents in the Swedish literary texts. The referents in the social science texts are evenly distributed between a specific, a general and an abstract level. Finally, the texts read in natural sciences consist to a large extent of above all generalized, but also abstract, referents.

5.2 Levels of grammatical metaphor and technicality

The levels of grammatical metaphor and technicality in the texts are also analyzed in accordance with the criteria mentioned in chapter 4. The figure below shows averages of the averages of the number of grammatical metaphors per referent in the texts from the same subject area.

![Figure 8. Percentages of grammatical metaphors per referent in texts from different subject areas.](image)

Figure 8 shows the percentages of grammatical metaphors out of all referents in texts from different subject areas. The differences between the degrees of grammatical metaphor in the Swedish literary texts and the social science texts, and between the Swedish literary texts and the natural science texts,
are significant at the level of 1%. There is however no significant differences between the degree of grammatical metaphors in the social science texts and the natural science texts.

Figure 9. Degrees of technicality in textbook texts from different subject areas.

Figure 9 shows the degrees of technicality in texts from different subject areas. The differences between the degrees of technicality in the Swedish literary texts and the social science texts, and between the Swedish literary texts and the natural science texts, are significant at the level of 1%. In contrast to the degrees of grammatical metaphors, there are also significant differences between the degree of technicality in the social science texts and the natural science texts.

5.3 A closer look at the differences in abstraction between subject area and different grade levels

However, the degrees of abstraction in general change across the grade levels within all three different subject areas. A closer examination of differences between different grades, shows that the degree of specific referents decreases at higher levels of education. In the same way the degree of generalized referents increases. This is the overall trend in texts from all three subject areas.

The following section will describe the statistical differences between the degrees of abstraction, grammatical metaphor and technicality within different grade levels.

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24 The difference between the degrees of grammatical metaphors in texts from different grade levels is tested with a significance test for comparing two proportions (http://math.uc.edu/~brycw/classes/149/wang.htm).
5.3.1 Swedish literary texts—abstraction, grammatical metaphors and technicality at different grade levels

Even though the Swedish literary texts generally are the least abstract texts in the study there are differences between the different grade levels. The texts become increasingly generalized and abstract. In the literary texts there are significant differences between grades 5 and 8, between grades 8 and 11, and between 5 and 11, at the 1% level.

![Degrees of abstraction in Swedish literary texts](image)

*Figure 10. Degrees of abstraction in Swedish literary texts from different grade levels.*

When it comes to the degree of grammatical metaphor in the texts, there is a significant difference at the 1% level between the degree of grammatical metaphors per referent both in texts from grades 5 and 8, and in the texts from grades 5 and 11. There is no significant difference between grades 8 and 11. From the perspective of increasing density, the most interesting difference is then between grades 5 and 8.
There is no significant difference in technicality between texts from different grade levels.

5.3.2 Social science texts—abstraction, grammatical metaphors and technicality in different grade levels

There are also significant differences between the degrees of abstraction in the social science texts in different grade levels. There are significant differences at the 1% level between the levels of abstraction in the texts from all grades studied, i.e. between grades 5 and 8, between grades 8 and 11, and between grades 5 and 11.
When comparing the percentages of specific, general and abstract referents in the social science texts to the corresponding percentages in the Swedish literary texts, there are greater differences in the latter. Especially the level of generalized referents is very similar across the three grade levels. Furthermore, when compared to the Swedish literary texts, the level is high. The degree of generality seems to be very similar in texts from all three grade levels, while the degree of specific referents decrease and the degree of abstract referents increase with the grade levels.

The degree of grammatical metaphors in the texts is another matter. There is a significant difference at the level of 1% between the degree of grammatical metaphor in grade 5 and grade 8 and between grade 5 and grade 11. However, there is no significant difference between the degree of grammatical metaphor in grades 8 and 11.
Another interesting characteristic of these texts is the degree of technicality. There is a significant difference of technicality in the texts. However, this is a difference where the higher grade levels have lower degrees of abstraction in comparison to the lower.

5.3.3 Natural science texts—abstraction, grammatical metaphors and technicality in different grade levels

The natural science texts are the most generalized and abstract texts in the study. Very few of the referents are specific. There is a significant difference between the levels of abstraction between grade 5 and 8, and 5 and 11, at the 1% level. The difference between grades 8 and 11 is significant at the 5% level. Once again the difference between grades 5 and 8 is larger than the difference between grades 8 and 11. This result has probably also to do with the choice of upper secondary school programs from which the texts were compiled. No texts were compiled from profiled science programs.
When it comes to the degree of grammatical metaphors in the natural science texts, there is a significant difference at the level of 1% between the degree of grammatical metaphors in grade 5 and grade 8 and between grade 5 and grade 11. However, there is no significant difference between the degree of grammatical metaphors in grade 8 and grade 11.

The referents in the natural Science texts also become increasingly technical. There is a significant difference between grades 5 and 8, and between grades 5 and 11, at the level of 1%, when it comes to the technicality in the texts.
The difference between the degree of technicality in grades 8 and 11 is significant at the level of 5%.

5.4 Summary

To some extent the results from this chapter confirms what we already had an idea about when it comes to abstraction in textbook texts. Nevertheless, it needed to be confirmed since no previous studies had done it before.

In short, the investigations presented in sections 5.1-5.4, showed that the degrees of specific, general and abstract referents vary between texts from different school subjects and grade levels. These investigations also showed that the degrees of abstraction on the whole are higher in the texts from later grade levels, than in the texts from the earlier grades. The degree of grammatical metaphors in the texts is increased in grade 8, compared to grade 5. It is interesting to note that there is no significant difference between the degree of grammatical metaphors in grade 8 and grade 11.

The results from work presented in this chapter can be summarized as:

- Referents vary between texts from different school subjects. A comparison between text from the different subject areas shows that Swedish literary texts to a large extent are about specific referents whereas social science texts have fewer specific referents and more general and abstract ones, and the natural science texts have an even higher degree of generalized referents.

- The degrees of abstraction are higher in the texts from later grade levels, than in the texts from the earlier grades.

- The degree of grammatical metaphors in the texts is increased in grade 8, compared to grade 5. It is interesting to note that there is no significant difference between the degree of grammatical metaphors in grade 8 and grade 11. This is the case in all three subject areas. It appears that the increase in grammatical metaphors in the texts analyzed occurs between grades 5 and 8 but not between grades 8 and 11.

- There is no expected increase in technicality in later grade levels in the Swedish literary texts and the social science texts. However, there are significant increases in technicality in the natural science texts, when comparing the texts of grades 5 and 8, and grades 8 and 11.
The significant differences concerning abstraction, grammatical metaphor and technicality between the texts from different school years, and different subject areas, are summarized in table 16.

Table 16. A survey of the significant differences between degrees of abstraction, grammatical metaphor and technicality in different grade levels and subject areas.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Swedish literary texts</th>
<th>Social science texts</th>
<th>Natural science texts</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 → 8</td>
<td>sign. 1%</td>
<td>sign. 1%</td>
<td>sign. 1%</td>
</tr>
<tr>
<td>8 → 11</td>
<td>sign. 1%</td>
<td>sign. 1%</td>
<td>sign. 1%</td>
</tr>
<tr>
<td>5 → 8</td>
<td>sign. 1%</td>
<td>no sign.</td>
<td>sign. 1%</td>
</tr>
<tr>
<td>8 → 11</td>
<td>sign. 1%</td>
<td>no sign.</td>
<td>no sign.</td>
</tr>
<tr>
<td>Deg. of technicality</td>
<td>no sign.</td>
<td>no sign.</td>
<td>sign. 1%</td>
</tr>
<tr>
<td>5 → 8</td>
<td>sign. 1%</td>
<td>sign. 1%</td>
<td>sign. 1%</td>
</tr>
<tr>
<td>8 → 11</td>
<td>sign. 1%</td>
<td>sign. 1%</td>
<td>sign. 1%</td>
</tr>
<tr>
<td>5 → 8</td>
<td>sign. 1%</td>
<td>no sign.</td>
<td>no sign.</td>
</tr>
<tr>
<td>8 → 11</td>
<td>sign. 1%</td>
<td>no sign.</td>
<td>no sign.</td>
</tr>
</tbody>
</table>

As mentioned, although the texts in this study vary in their degree specificity, generality and abstraction, the vast majority of the texts contain referents from all three levels of abstraction. All texts have referents from at least two levels of abstraction. In the following chapter an analysis of shifts between abstraction levels will be analyzed and a new classification of the texts used to further develop the understanding of abstraction in textbook texts.

25 The significant difference between the degrees of abstraction between grade levels 5 and 8, and between 8 and 11 is seem to be based on lower degrees of technicality in the later grade levels, not as could be expected on higher degrees.
CHAPTER 6
Abstraction in a new light

The results presented in chapter 5, namely, the more stable levels of abstraction in the texts, confirmed an earlier understanding of narrative texts as more specific and science texts as more abstract. The work presented in this chapter is an attempt to develop and nuance this understanding of abstraction in textbook texts.

The degree of abstraction is often described as being relatively stable throughout the specific text. Texts are in many cases viewed as being either specific/concrete or generalized/abstract. Yet, the referents in a text are rarely, if ever, exclusively specific or general or abstract.

The more stable identification of referents as specific, general and abstract made in the previous sections gives raise to some questions. As mentioned, almost all texts had at least one instance of specific, general and abstract referents. Nevertheless, different texts showed varying degrees of abstraction. Relevant questions in the context are how abstraction shifts within texts, and how a description of the dynamics of abstraction can complement an understanding of the text types belonging to the three subject areas.

The second part of the chapter starts out from a new classification of the texts, based exclusively on their degree of abstraction, and not influenced by the subject area or the grade level. The new classification of the texts is then related to their content and the function of shifts towards different levels of abstraction.

An analysis of grammatical metaphor and technicality is added to all the different stages of analysis of abstraction. Finally, the results will also be discussed with reference to the distinction of everyday knowledge and specialized knowledge.

6.1 The dynamics of abstraction within text

Shifts and changes in language use have often been the focus of attention for linguists, ranging from early studies of sound change within the area of historical linguistics to more recent studies of turn taking in Conversation
Analysis. In this study the focus is on shifts in abstraction as well as stable levels of abstraction in texts.

With the aim of describing the shifts in abstraction within the texts, groups of continuous referents with the same degree of abstraction were identified. The classification of referents into specific, general and abstract, described in previous sections, were used. The analysis of the cohesive chains in the texts, described in section 3.3.1, provided a basis for the analysis of continuous levels of abstraction. After several tests of possible length of meaningful analysis units, the minimum number of referents to form a continuous level of abstraction was set to two. Sporadic instances of referents of one level of abstraction have therefore not been seen as a continuous level. At an early stage, I tested an analysis based on larger analytical units than two continuous referents as a minimum. However, these larger analysis units failed to identify meaningful shifts made in summaries, for example, where a few abstract referents summarize the content of earlier general referents, or specific example, given within parenthesis, to a general discussion. However, the average of referents per continuous level of abstraction is considerably higher than 2, namely about 20 in the Swedish literary texts, about 18 in the social science texts and about 33 in the natural science texts. Often, two levels of abstraction are simultaneous in the text. The total number of shifts in the studied texts amounts to 491.

The analysis if the text below is an example of continuous groups of referents in a social science text from grade 5.

The Old Testament

*Why do we read the Old Testament?*

(1) In grade 4 you read in the New Testament about Jesus and his people, the Jews. Jesus was a Jew, and his people, the Jews, lived in this time in Palestine, which you can see on the map. Here I will tell you about the ancient history of the Jews, which is written in the Old Testament. Why is it so important?

(2) Well, it is because Judaism is one of the major world religions. First Judaism appeared around 2000 years B.C., then Christianity around the year 0 and finally Islam about 600 A.C. The three world religions, Judaism, Christianity and Islam are called sister religions. This is because they have so many narratives in common in the Old Testament.

(3) Many things in our Christian culture come from the Old Testament. Christianity teaches us for example that the prophets in the Old Testament speak about Jesus. To understand Jesus we have to know the religion he had himself. (Lindh & Söderberg, 1991:82-83)²⁷

²⁶ Very few studies have been made in this area. Lindeberg (1985) has studied shifts between a generalized and a more specific level. This analysis is however carried out on a clause level.

²⁷ "Gamla testamentet"
An analysis of the shifts in the text can be summarized as in table 17. Referents from one level of abstraction that only occur once are excluded from the analysis as they do not form a continuous level.

Table 17. Analysis of abstraction shifts in the text about the Old Testament.

<table>
<thead>
<tr>
<th>Paragraph</th>
<th>Specific level</th>
<th>General level</th>
<th>Abstract level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Focus on specific referents: Gamla testamentet, Gamla testamentet, Nya testamentet, Jesus, Jesus, Palestina, karta, jag, Gamla testamentet, där (11)</td>
<td>Simultaneous focus on general referent: åk 4, du (generalized), hans folk, judarna, hans folk, judarna, du (generalized) (7)</td>
<td>Focus on abstract referents, the world religions: judendomen, världsreligionerna, judendomen, kristendomen, islam, syskonreligionerna, de, kultur, kristendomen, religion (10)</td>
</tr>
<tr>
<td>2</td>
<td>Focus on specific referents: Gamla testamentet, Gamla testamentet, Jesus, Jesus, han (5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Focus on specific referents: Gamla testamentet, Gamla testamentet, Jesus, Jesus, han (5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The shifts between levels of abstraction in this extract occur clearly when there is a new paragraph. Section 6.2 describes in more detail the functions of the shifts, both formal and content-related.

An overall analysis of the shifts in the texts shows a clear difference between on one hand the Swedish literary texts and the natural science texts, and on the other the social science texts. This difference lies in the number of texts that contain shifts between more than two levels of abstraction. While the Swedish literary texts and the natural science texts display fewer texts with many shifts between all three levels of abstraction, social science texts usually shift between specific, general and abstract groups of referents.

---

Varför läser vi Gamla testamentet?
(1) I åk 4 läste du i Nya testamentet om Jesus och hans folk, judarna. Jesus var jude och hans folk judarna bodde på Jesu tid i Palestina som du kan se på kartan. Här ska jag berätta om judarnas gamla historia, den som står i Gamla testamentet. Varför är det som står där så viktigt?
(2) Jo det beror på att judendomen är en av de stora världsreligionerna. Först kom judendomen omkring 2 000 år f Kr, så kom kristendomen ca år 0 och till sist islam omkring 600 år e Kr. Man brukar kalla de tre världsreligionerna, judendomen, kristendomen och islam, för de tre syskonreligionerna. Det gör man för att de har så många gemensamma berättelser som står i Gamla testamentet.
(3) Mycket i vår kristna kultur kommer från Gamla testamentet. Kristendomen lär oss t ex att profeterna i Gamla testamentet talar om Jesus. För att förstå Jesus måste vi veta vilken religion han själv hade.” (Lindh & Söderberg, 1991:82-83)
Thus, 18% of the Swedish literary texts only had shifts between groups of specific and groups of general referents. The natural science texts had even less variation. 55% of these texts only shifted between generalized and abstract groups of referents. In comparison to these texts, almost all social science texts had instances of all three levels of abstraction. Only 5% of these texts shifted between just two levels.

A comparison between all six kinds of shifts in different directions, i.e. specific-generalized, generalized-specific, generalized-abstract, abstract-generalized, specific-abstract and abstract-specific, yields a similar result.

Figure 16. Shifts in abstraction levels in texts from different subject areas

The identification of groups of referents with the same degree of abstraction shows some interesting differences between texts from the three subject ar-
eas. Compared to the other subject area texts, the social science texts display a pattern of even columns. That is, the texts in social sciences hold a great variety of shifts between different abstraction levels; shifts between specific referents and general referents, as well as shifts between general referents and abstract referents. The Swedish literary texts have slightly less variety of shifts and the natural science texts even less so. The levels of abstraction in the shifts naturally correspond to the more stable degrees of abstraction shown in figure 7.

6.1.2 Direction of shifts

Another issue of interest is the general patterns of shifting from one level of abstraction to another. The issue in question is whether it is more common to shift from a specific level to a general than from a specific level to an abstract level in Swedish literary texts, for example. These patterns in the directionality of the shifts clearly look different in texts from different subject areas.

Figure 17 shows the typical shifts within the Swedish literary texts.

![Figure 17. Shifts from one level of abstraction to another in the Swedish literary texts](image)

The Swedish literary texts show a tendency towards the lowest possible degree of abstraction in the shifts from one level to another. Starting from a specific level, 72% of the shifts lead to a generalized level. When the starting-point is a generalized level, there is a tendency to shift to a specific level and not to an abstract one. Finally, when beginning at an abstract level there are about as many shifts leading to a specific level as there are to a general level.
The typical direction of the shifts within the social science texts are shown in Figure 18.

The social science texts show once again a more evenly distributed pattern. When starting from a specific level there is a higher degree of shifts leading to a generalized level than to an abstract one. However, when the starting point is a generalized level, 49% of the shifts lead to a specific level while 51% lead to an abstract level. Abstract levels as starting point lead more often to a general than to a specific level.

Finally, Figure 19 gives an illustration of the shifts in the natural science texts.
The shifts in the natural sciences texts show an inclination towards highest possible degree of abstraction. When starting from a specific level, 58% of the shifts lead to an abstract level. A generalized level as a starting point for shifts, leads in 82% of the cases to an abstract level. Finally, nine out of ten shifts from an abstract level lead to a generalized level.

To some degree the figure above confirms the level of generalization as an entry point to abstraction, or as an intermediate step between specificity and abstraction. Starting from a specific level, the shifts more often lead to a generalized level than to an abstract level. This holds true at least for the overall more specific texts read in Swedish literary and social sciences classes.

6.2 The function of the abstraction shifts in the texts

An identification of shifts between different levels of abstraction gives a picture of great diversification in the social science texts, somewhat less variety in the Swedish literary texts and even less in the natural science texts. An interesting question is that of the functions of the shifts in the texts. In this section I will focus on the function of shifting from one level of abstraction to another.

Undoubtedly, this is closely related to text content. Generally, the levels of abstraction in themselves can be described as holding the potential for different functions. The specific referents hold the potential for a narrative function as they are about specific persons and objects that exist in time and space. These texts are in general closer to the students’ everyday experience. The general referents hold a potential for a describing and generalizing function, they are about larger groups of persons and objects or generalized persons and objects. The abstracts referents have the potential for an interpretative function, being about valuations and classification. By using the word ‘potential’ in this context, I would like to emphasize the possibility, but not the obligation. The texts with dominating general and abstract referents are in general closer to the specialized knowledge that is presented in the subject area texts. These potentials for different functions naturally have consequences for the students encounter with the texts. These issues will be further discussed in chapter 9.

But specificity, generalization and abstraction can also be instantiated by different kinds of referents. The initial investigation of abstraction in chapter 5 showed that very few texts entirely lack referents from one of the abstraction levels. Most texts have at least one instance of specific, general and

28 For a more detailed description of narratives and preliminary stages of narratives, see Liberg, Espmark, Wiksten and Büttler, 1997.
29 See earlier discussion about existence in time and place, section 4.3.3.
abstract referents. Abstraction can therefore not be regarded as something that some texts have and other do not have. Rather, it is a matter of degrees of abstraction. However, the kinds of referents that express these levels of abstraction differ to a great extent. There are texts where the focus is on specific, concrete referents close to the lived experience of the reader (*Pippi Longstocking*), where the general referents are groups of specific objects and persons close to the reader’s experience (*her friends, sweets*) and where the abstract referents belong to the everyday domain (*her dream last night*). These texts can be contrasted with texts in which the specific, concrete referents are historical persons (*Marie Curie*), where the general referents are generalized chemical substances (*hydrogen ions*) and the abstract processes are chemical processes (*neutralization*).

Macken-Horarik (1996) poses the question of the difference between learning in school and learning in other cultural domains. She differentiates between three domains in which learning takes place; the everyday domain, the specialized domain and the reflexive domain. She describes the everyday domain as the world of home where language is a part of reality. Spoken dialogue is crucial to the coordination of practices and to the social relationships in this domain. Learning within this domain is achieved though doing things together with persons to whom you are emotionally close. The interpersonal roles are characterized by familiarity, solidarity and shared perspectives (Macken-Horarik, 1996:241). Learning in formal education takes place within the specialized domain. The knowledge in this domain is systematically organized. Students in this domain have to reproduce knowledge and “learn to make meaning explicit: to read and write texts which build up all information necessary to their interpretation.” (Macken-Horarik, 1996:238). Language is not only a taken for granted part of reality but construes the reality. The roles encouraged within this domain are expert roles, characterized by impersonality, formality and social distance. The texts described above and their different kinds of specificity, generality and abstraction can also be characterized as belonging to different domains of knowledge. A text about Pippi Longstocking, her friends and her dream last night can, despite some surreal features such as being able to carry a horse, be characterized as part of the everyday domain. A text about Marie Curie, hydrogen ions and neutralization clearly belongs to the specialized domain.

One way of describing these differences between texts is to focus on the function of the transitions between abstraction levels. The issue in focus is the function of the transition from one level of abstraction to another. Function is used in this context in a rather weak sense, rather in a descriptive way than an interpretative way. The aim here is to show the differences between text types rather than investigate the underlying motives of an author. The analysis of transition focuses on the referent that introduces a new level of abstraction.
The analysis of function was made on the basis of the results of the shifts between different abstraction levels, as described in the previous sections. Close readings of the texts with detailed descriptions of all first referents in new levels of abstraction constituted the starting point. Next, similarities of functions of these introducing referents were sorted out and classified. This qualitative analysis resulted in the following functions:

Specific level
A. Focus on specific, concrete persons and objects close to the reader.
B. Focus on specific, concrete persons and objects far from the reader.
C. Situating in time and space.

Generalized level
D. Focus on groups of specific, concrete persons and objects close to the reader’s experience.
E. Focus on groups of specific, concrete persons and objects distanced from the reader.
F. Generalization of persons and objects.

Abstract level
G. Expressing evaluations and classifications through common abstract referents.
H. Expressing evaluations and classifications through technical abstract referents.

The functions are ranked, within each abstraction level, on a scale from having features of an everyday domain to having features of a specialized domain.

Function A belongs to an everyday domain whereas function B belongs to a specialized domain. Function D within the generalized level typically belongs to an everyday domain whereas function F belongs to a specialized domain. Finally, function G on an abstract level belongs to an everyday domain and function H to a specialized domain. The only exception to this ranking of functions with respect to domain is function C. In my opinion, function C applies to the everyday domain as well as to the specialized domain. The following section will describe the distribution of these functions in texts from different subject areas.

6.2.1 Swedish literary texts
In the Swedish Literary texts, new levels of abstraction are typically introduced by function A (focus on specific, concrete persons and objects close to the reader), function D (focus on groups of specific, concrete persons and objects close to the reader’s experience) and function G (expressing evalua-
tions and classifications through common abstract referents). 87% of all introductory referents in the Swedish literary texts belong to these three functions. 76% of all individual texts have at least one instance of all three functions.

Thus, the transitions to a specific level have the function of focusing on a specific person, or object, in most cases a protagonist in the text. The transitions to a generalized level is to a large extent about focusing on groups of specific persons or objects close to a reader, i.e. groups of protagonists or objects. When transferring to an abstract level, this is to a large extent about expressing evaluations with common abstract referents. This is often about expressing the thoughts and feelings of the protagonists. These typical introductions of new levels of abstraction can all be exemplified by this text read in grade 11.

She has to get up, has to get dressed, has to go to school. It feels unbearable. It is like the dream is more important than anything else…
But everyday life takes over. As usual.

---
Your best memory? The worst thing you can remember?
Typical school questions. But her classmates fall silent when she begins to tell. Because this is about the worst thing.

She should have talked about the persecutions, the deadly gases, the escape from the native country. Or about when the whole family hid in the countryside. That was what she had in mind. But instead the candy bag came to mind:

They had escaped to Sweden but were not allowed to stay. Head over heels, they went to Germany, but got caught. After several days in a dirty room a police officer would drive them to Denmark. To put them on the boat for Sweden, to the Swedish police – and to expulsion. (Widerberg & Ukiqi, 1999:9-11)

In the first paragraph there is a transition from a focus on specific referents, the *she*, to the abstract referents *dream* and *everyday life*. The function of the transition in this case, function G, is to make an evaluation and comparison

---

30 "Hon måste stiga upp, klä på sig, måste till skolan. Det känns nästan outhärdligt. Det är som om drömmen är viktigare än allt annat…
Men vardagen tar över. Som vanligt.

---
Ditt roligaste minne? Det värsta du minns?
Typiska skolfrågor. Men hela klassen blir plötsligt tyst då hon berättar. För det gäller det där värsta.
Egentligen skulle hon ha talat om förföljelserna, giftgasen, flykten från hemlandet. Eller då hela familjen gjorde sig i ett gammalt skrabbigt hus ute på landet. Det var också vad hon hade tänkt berätta. Men i stället trängde sig godispåsen fram:
between her dream and the demands of the everyday life. In the next paragraph, there is a transition from a generalized level with referents such as school questions and classmates, to the she. This transition changes the focus from a more general one to the specific, concrete protagonist, i.e. function A. In the last paragraph the focus changes once more, from the main protagonist to the group of referents, i.e. the family. This could be seen as an example of function D.

Consistent with an overall understanding of narrative texts, the functions of the shifts in these texts are all on a rather everyday level, even in the case of transition towards a generalized and abstract level.

6.2.2 Social science texts

As could be expected from the results of earlier analysis, the referents that introduce new levels of abstraction in the social science texts display a greater variety than the ones in the Swedish literary texts. The introductions of referents have more, and more varied, functions than texts from the other subject areas. All eight of the functions can be identified once in at least one text, but there are five functions that are more common than the others. These five functions (B, C, E, F and G) are about focusing on specific persons and objects far from the reader, situating the events in time and space, focusing on groups of specific referents far from a reader, generalizing a person or object and finally expressing evaluations and classifications with common abstract referents. The text Ten years of revolution from grade 8 can be used to exemplify four of these functions.

10 YEARS OF REVOLUTION

By the end of the 18th century, France was the richest and most powerful country of Europe. Kings and nobility in other countries admired everything that had to do with France. It was considered elegant and modern to converse in French, to be up to date with French fashion and to decorate castles with French-style furniture.

All this started from the French king and his court in his huge castle Versailles, situated about 20 kilometers from Paris. In this place, the king Louis XVI and the nobility lived with their families in exceptional luxury and great affluence.

During the days they could entertain themselves by going hunting in the king’s forests or by taking picnics in the gardens. In the evenings and nights, time was spent eating and drinking, conversing, dancing and attending the theatre and the opera.

---

31 The social sciences texts have an average of 4.2 different functions per text compared to Swedish literary texts with an average of 3.8 and Natural sciences texts with an average of 3.0 different functions per text, in the abstraction level-introducing referents.
In the text there are parallel groups of specific and generalized referents. The specific referents in the first sentence situate the events in time and place, *the end of 18th century, France* (i.e. function C). The rest of the paragraph is about groups of specific referents far from a reader, i.e. *kings, nobility, countries* (i.e. function E). At the beginning of the second paragraph the focus is transferred to a specific historical person far from a reader, *Louis XIV* (i.e. function B). At the end of the second paragraph an evaluation of life at the French court is expressed by using common abstract referents, *luxury* and *affluence* (i.e. function G).

There are some differences with respect to function when comparing the referents that introduces groups of new levels of abstraction in texts from different grade levels. Just as the more stable degree of abstract referents increases with the grade level, so does the function of the introductory referents become more abstract. Thus, in grade 11 there are, in comparison to grade 5, more introductory referents that begin by expressing evaluations and classification by means of both common and technical abstract referents.

The multitude of different ways of in which the groups of a certain level of abstraction are introduced gives a large potential for contacts zones between the different levels of abstraction.

The functions of introductory referents are closer to specialized language than the Swedish literary texts. The most specialized forms of abstraction is not present in these texts, however.

### 6.2.3 Natural science texts

The analysis of shifts in levels of abstraction in an earlier section gave the impression that the natural science texts were texts with very few shifts. A more detailed identification of functions of the introductory referents confirms this impression. Three functions, function F, G and H, dominate the introductory referents in the texts. Since the natural science texts to a large extent are about generalized and abstract referents, these functions are about
generalizing and expressing evaluations and classifications. Two extracts from the text *When acid and base meet, a salt is formed* are used to exemplify these functions.

Do you remember that you could call hydroxide ions “broken water molecules”, where hydrogen ions were missing? What do you think happens when you blend the two solutions? Well, the acidic hydrogen ions and the basic hydroxide ions are joined and become water!

The mixed solution is neither a base nor an acid. The base and the acid have neutralized each other. The reaction is called neutralization.

---

In cultures where the diet largely consists of milk and raw or grilled meat, like that of many nomadic peoples, the degree of salt is sufficient. But if you eat a lot of vegetables or cereal products or boil the meat – so that the meat becomes leached – you have to add salt.

Salting was also one of the earliest methods of conserving provisions, and it is natural that salt became a very important commodity. (Ekdahl et al., 1995:114-115)

This part of the text starts with an address to a generalized reader, a *you*.

The first two sentences of the second paragraph stay on a generalized level but the focus is now on the description of a generalized experiment where two solutions are blended. In the third sentence of this paragraph the event is classified as neutralization, thus function H.

In the second extract from the text, salt, the main theme of the text, is described from a less technical and more everyday perspective. The focus in the first paragraph is on groups of persons and objects. In the second paragraph this is changed to an abstract level of rather common referents such as salting and method. This way of combining technical accounts of a substance with descriptions of the everyday use of the same substance is very frequent in the natural science texts.

There is a clear difference with regard to grade level in the natural science texts. The level-introducing elements in the texts read in grade 5 are introduced by two main functions; generalizing of persons and objects, function F, and the expressing of evaluation and classification with common abstract...
referents, function G. In grade 8 and grade 11, an interpretative function of expressing valuation and classification with technical abstract referents is increased. All in all, level-introducing elements have very limited functions. The variation in the different functions is very limited in almost all texts read in natural sciences.

The functions of the introductory referents in these texts belong in general to the specialized domain, regarding both the generalized level and the abstract level.

6.3 Summary of levels of abstraction

With a focus on abstraction this chapter describes abstraction in texts from three different subject areas. The traditional picture of the conceptual development of children describes a movement from the specific and concrete to the generalized and abstract. The analysis of the texts in this study show that even though there is an overall trend towards a higher degree of abstraction in the texts of the later stages of education, the degree of abstraction varies within texts. Thus, the movement between levels of abstraction itself becomes interesting.

The results from the previous sections can be summarized, in reference to subject areas as:

- In the Swedish literary texts the referents are predominantly specific. Even though the texts have a rather low degree of abstraction, the entries to different levels of abstraction are not varied, and the movement between the levels is rather fixed. Even though there are shifts towards generalized and abstract levels, the referents in these shifts belong to the everyday domain.

- In the social science texts the generalized referents are dominant, but specific/concrete and abstract referents exist side by side. There are many different functions of the entries to different levels of abstraction. There are shifts that can be characterized as belonging to a specialized language when it comes to generalization. However, the shifts towards abstraction do not belong to the specialized domain.

- In the natural science texts the referents are heavily dominated by generalized and abstract referents. There are very few different en-

35 In the natural science texts 40% of the texts have only two different functions of the level-introducing elements. This should be compared to 6% in the Swedish literary texts and 5% in the social science texts.
tries to levels of abstraction. The movement between levels of abstraction thus becomes rather limited. The functions of the shifts belong to a specialized domain.

6.4 A new classification – texts of different abstraction types and their function

Besides subject-based classification, there are other ways of describing the texts in the study. One way is to start from the analysis of specificity, generalization and abstraction in the texts. In this part of the work, I have chosen to take a broad view of the degrees of specific, generalized and abstract referents and generalized as being of either low (L), intermediate (I) or high (H) in degree. When these degrees are combined, all texts get a combination of the degrees of specificity, generalization and abstraction. All HLL texts with a high degree of specificity, a low degree of generalization and a low degree of abstraction can then be compared to for example LII texts with a low degree of specificity, an intermediate degree of generalization and an intermediate degree of abstraction. Zero to 33% of abstract referents are regarded as a low degree of abstraction, 34 to 66% as an intermediate degree and 67 to 100% as a high degree. From this kind of classification, various patterns of abstraction can be studied. The advantage of this classification is that the degree of abstraction in the texts is in focus rather than the subject area of grade levels. With the pattern of abstraction in the text as a starting point, it is possible to see possible similarities in texts from different subject areas. It also makes it possible to from another angle discuss the relationship between subject area and degree of abstraction.

One might think that the degrees low, intermediate and high should form 27 different patterns of abstraction\(^\text{36}\). However, since the numbers of the specific, general and abstract referents are based on percentages, the sum must always be 100% and the number of possible combinations of L, I, and H is thus restricted. There is, for example, no possibility of a text with a high degree of specificity (67-100% specific referents), a high degree of generalization (general 67-100%) and a high degree of abstraction (67-100% abstract referents) since the sum of these percentages of referents would exceed 100%. Out of 27 possible combinations, 9 combinations remain. The texts in the study cover six combinations out of nine possible ones.\(^\text{37}\)

\(^{36}\) The option of \(L, I, H \times option of L, I, H \times option of L, I, H = 27\) possible combinations of \(L, I, H\)

\(^{37}\) There are actually seven. The seventh type, ILI occurs in a single, rather extreme text in the subject of Swedish for grade 8. This text was therefore transferred to another, commonly occurring type, the ILL type.
These combinations of abstraction degrees will be called abstraction types. Without much effort, the six occurring abstraction types can be ranked from the most specific type to the most abstract in the following way:

Table 18. The six abstraction types that occur in the texts in the study. The types are ranked from specific/concrete to abstract.

<table>
<thead>
<tr>
<th>degree of specificity</th>
<th>degree of generalization</th>
<th>degree of abstraction</th>
<th>abstraction type</th>
</tr>
</thead>
<tbody>
<tr>
<td>high</td>
<td>low</td>
<td>low</td>
<td>HLL</td>
</tr>
<tr>
<td>intermediate</td>
<td>low</td>
<td>low</td>
<td>ILL</td>
</tr>
<tr>
<td>intermediate</td>
<td>intermediate</td>
<td>low</td>
<td>IIL</td>
</tr>
<tr>
<td>low</td>
<td>intermediate</td>
<td>low</td>
<td>LIL</td>
</tr>
<tr>
<td>low</td>
<td>high</td>
<td>low</td>
<td>LHL</td>
</tr>
<tr>
<td>low</td>
<td>intermediate</td>
<td>intermediate</td>
<td>LII</td>
</tr>
</tbody>
</table>

The only problematic part of the ranking was the order of the LHL and LII types. The intermediate degree of abstraction in the LII type justified the higher ranking of the LII type, in spite of the lower degree of generalization in comparison with the LHL type.

The texts distribute relatively evenly across the six abstraction types. The largest type is the LHL type where 29% of all texts are found. 75% of the natural science texts belong to this abstraction type.

Texts from different subject areas and grade levels distribute differently across these abstraction types. However, with very few exceptions, this distribution follows the previously noted pattern of increasing abstraction in accordance with grade level and subject area. The abbreviations in table 19 refer to the subject areas; Swedish literary (SL), social science (Ss) and natural science (Ns).

Table 19. Distribution of abstraction types in texts from different subject areas and grade levels

<table>
<thead>
<tr>
<th>Abstraction types</th>
<th>Sl 5</th>
<th>Sl 8</th>
<th>Sl 11</th>
<th>Ss 5</th>
<th>Ss 8</th>
<th>Ss 11</th>
<th>Ns 5</th>
<th>Ns 8</th>
<th>Ns 11</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLL</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>ILL</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>IIL</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>LIL</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>LHL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>LII</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>9</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>9</td>
<td>5</td>
<td>5</td>
<td>58</td>
</tr>
</tbody>
</table>

Even though this classification exhibits the same pattern of increasing abstraction as the classification of the texts as ranging from different subject
areas and grade levels, some advantages are apparent. The sub-classification of the texts into six different abstraction types renders it possible to nuance our understanding of the texts and to show the differences as well as the similarities of texts from different subject areas. It also provides more of a continuum of abstraction in texts, where the texts are classified by their inherent qualities rather than by the subject within which they are studied.

Before presenting a more detailed description of the different abstraction types, I will give a general view of the functions of the introducing elements in texts of different abstraction types. I use the same classification of function as described earlier in section 6.2.

![Figure 20. Functions of the elements that introduce new levels of abstraction in texts of different abstraction types.](image_url)
In the results presented in figure 20 it is striking how the functions typical of the everyday domain are more frequent in the texts with the lowest degree of abstraction. In the HLL and the ILL texts the functions A, D and G are the most common ones, together corresponding to a large share of all functions present in the texts. As mentioned, functions A, D and G represent the most everyday types of specificity, generality and abstraction. Similarly, the texts with the highest degree of abstraction are dominated by the functions typical of the specific domain. In the LHL and the LII texts, where none of the functions of specificity and generality belonging to the everyday domain, function A and D are present. In these texts, about half of the introducing elements have functions F and H, which are the functions of generality and abstraction that belong to the specialized domain. All in all, the results presented in this figure suggest a connection between the degree of abstraction in the texts and their belonging to the everyday and the specialized domain.

6.4.1 Abstraction types, grammatical metaphor and technicality

The patterns of abstraction have also been compared to the degrees of grammatical metaphor and technicality.

![Grammatical metaphors per referent in different abstraction types](image)

*Figure 21. Grammatical metaphors per referent in different abstraction types*

As the figure illustrates, the main difference is between the HLL and the LII texts. In the HLL texts 4.5% of the referents are grammatical metaphors. This can be compared to the 14.4% of grammatical metaphors in the LII texts.
Figure 22. Degree of technicality in different abstraction types

The results presented in figure 22 suggest a connection between the degrees of technicality in the texts and their belonging to different abstraction types. In the least abstract texts, the HLL texts, only 2% of the referents are technical. In the most abstract texts 31% of the referents are technical. All in all, both the analysis of grammatical metaphors and the analysis of technicality agree with the analysis of abstraction types.

6.5 A closer portrayal of texts with different abstraction types

In this section I will undertake a closer portrayal of the different abstraction types, using the tools previously developed in this chapter. In order to examine the relationship between abstraction and text content, I will make use of the analysis of cohesive chains in the text, as presented in section 3.3.1.

6.5.1 Strong focus on the main characters, HLL texts

The HLL texts are the most specific/concrete texts in the study. The texts consist only of Swedish literary texts; no social science or natural science texts evinced the pattern of high specificity and low generalization and abstraction. The HLL texts are thus literary texts where there is a strong focus on specific animate referents. Animate referents include in these texts girls as well as giants and animals with human characteristics. In most of these texts an unbroken chain of expressions referring to a specific main character, runs through the texts. Thus, there is a constant focus on the main characters and very few and only short breaks from this focus. The few breaks that do
occur consist of descriptions of surroundings and groups of persons and objects.

The text below is an example of these main character-dominated texts:

**The boy who kept pace with a giant**

Once upon a time there was a boy who grazed his goats in the forest. One day he happened to come right up to a mountain, where a giant lived. The giant was disturbed and woke up. Angrily, he chased the boy and his goats through the forest.

That night, the boy took a piece of soft cheese and rolled it in sand and gravel until it looked like a stone. The next day he brought his goats once again to the mountain. The giant came bursting out:

- What are you doing here? he roared.
- Grazing my goats, dear master.
- Bugger off, you lousy creep, the giant shouted. If you ever show up again, I’ll treat you like this.

He picked up a stone and squeezed it until it broke into thousand pieces.

The boy pretended to pick up a stone, him too. But instead he picked up the cheese. He squeezed it until the whey dripped through his fingers.

-If dear master doesn’t leave me in peace, I’ll squeeze dear master the way I’m squeezing this stone, the boy said.

The giant got frightened and run into his mountain. (Min skattkammare, 1988:72-73)

At least one of the two main characters in the text, either the boy or the giant, is present in all sentences in the extract from the text. Even though other referents are mentioned, e.g. the forest, the mountain, the cheese, they are not described in any detail or especially focused on through larger parts of the text. The dominating focus is instead on the two specific main characters. The largest continuous cohesive chains in the texts concern in all seven cases main characters.

As could be expected, the shifts between abstraction levels in these texts are about focusing on specific persons, either individually or in groups, to a

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38 “Pojken som åt i kapp med jätten
På kvällen tog pojken en bit mjukost och rullade den i sand och grus, så att den liknade en grästen. Nästa dag förde han på nytt sina getter till berget. Jätten kom utfarande:
- Vad gör du här? vrålade han
- Vallar mina getter, kära far.
- Packa dig i väg, ditt usla kryp, skrek jätten. Om du någonsin kommer hit igen, så ska jag göra så här med dig.
Han tog en sten och kramade den, så att den sprang i tusen bitar.
Om kära far inte lämnar mig i fred, så kommer jag att krama kära far som jag kramar den här stenen, sa pojken.
Jätten blev rädd och rusade in i sitt berg.” (Min skattkammare, 1988:72-73)
small degree about generalizing persons and objects and to some extent about expressing values and classifications with common abstract expressions.

The world in which the reader is supposed to move in these texts consists of specific and concrete persons and objects, and the actions of these people.39 The specific persons present in these texts are everyday characters, both children and adults, and probably easy to identify with. Even though the settings of the texts vary, from fairy tales settings to northern Sweden in the fifties, the strong focus on one or two main characters is maintained. These texts clearly belong to the everyday domain.

Swedish literary texts from grades 5 and 8 as well as from grade 11 belong to this abstraction type.

### 6.5.2 Focus on the main characters and their settings, ILL texts

The second most specific texts in the study are the ILL texts with an intermediate degree of specificity, a low degree of generalization and a low degree of abstraction. All together this group of texts consists in this study of eight texts. Seven out of these eight texts are Swedish literary texts. They were read in Swedish literary classes in all three grades. The eighth text was read in social sciences but had a dominating narrative part. So the ILL texts, as well as the HLL texts, consist only of literary texts. Some of these texts are not especially directed towards young readers, but are extracts from Swedish novels.

At first glance there seem to be only small differences between the HLL and the ILL texts. Both have low degrees of generalization and abstraction, and they involve only literary texts in this study. But there are differences. Where the HLL texts mainly focus on specific animate referents, the focuses of the ILL texts are more varied. To be sure, the specific animate main characters also play an important role in these texts. But they are not the sole focus of the texts. The cohesive chains in these texts are, like the HLL texts, primarily about main characters but there are exceptions. Three out of eight texts have generalized objects as their second largest cohesive chain, e.g. the city, the philosophical doctrine, the wilderness. The ILL texts vary their focus between a main character, groups of specific referents where the main character is a part and descriptions of surroundings, and more generalized and abstract interpretations of the events and actors in the text. In some of these texts the main characters are mostly employed as a kind of background. The descriptions of settings and interpretations of thoughts and motives are in focus. The text below exemplifies this:

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39 I expected that there would be a difference between abstraction types with respect to the verbal processes. However, a systemic-functional analysis of the processes in the texts into material, relational and mental processes showed small differences between abstraction types.
During a conference in London the international society agreed that no 
borders should be altered by force and that the ethnical cleansing in Bosnia 
should come to an end. Halif joked about how secure he felt. We thanked 
the world around us while the shells exploded around the corner. “Thank you, the 
rest of the world, for intervening.”

It felt good to be back in Sarajevo, the foggy borderland between life and 
death had become home to me. Going to Sarajevo was like entering a world 
of nothing, like a free fall to Apocalypse Now. A world without rules or obli-
gations, without background and without any future. The city had had its ap-
peal since the experience of last summer’s shocking first encounter had be-
come less salient. I returned as quickly as possible, floating through the mist 
on Marsala Tita together with other ghosts, the soul dissolved and the senses 
searching for adrenalin, like a compass searching for the North Pole. The an-
guish that came to the surface was distant and quickly rationalized. The self-
control had deep-frozen all emotions. Being present here and now was the 
highest priority. (Hildebrandt, 2001:103-105)

Certainly, the main character in the text is present. But the main character is 
not the only thing focused on in the text. This extract also provides an exam-
ple of how the attention of the text is directed on the setting for a while, on 
Sarajevo and on the inner life of the main character.

When it comes to shifts between abstraction levels in these texts, they re-
semble the shifts in the HLL texts. They are about focusing on specific per-
sons, either individually or in groups, and to a small degree about generaliz-
ing persons and objects. To a slightly larger degree than the HLL texts, they 
are also about expressing values and classifications, using common abstract 
referents. These texts belong in general to the everyday domain.

6.5.3 The texts with many focuses, IIL texts

The IIL texts, with intermediate specificity, intermediate generalization and 
low abstraction, are the most many-sided texts of this study. They are many-
sided in the sense that they keep a divided focus on specific and concrete 
persons, on generalized groups of objects and persons, and also include ab-
stract referents.

40 “Under en konferens i London enades det internationella samfundet om att gränser inte ska 
ändras med våld och att den etniska rensningen i Bosnien skulle upphöra. Halif skämtade om 
hur tryggt det kändes. Vi tackade omvärlden medan granaterna slog ned vid husknuten. “Tack 
så mycket omvärlden för att ni ingriper.”

Det var skönt att vara tillbaka i Sarajevo, det dimmiga gränslandet mellan liv och död hade 
börjat kännas hemtamt för mig. Att åka till Sarajevo var som att träda in i en ingentingvärld, 
som fritt fällt till Apocalypse Now. En värld utan regler eller förpliktelser, utan bakgrund eller 
framtid. Staden hade lockat sedan upplevelsen av sommarens chockartade första möte sjunkit 
undan. Jag återvände så fort det gick, flöt fram genom dimman på Marsala Tita tillsammans 
mellan de andra andevarelserna, själens upplöst och sinnena pejlande efter adrenalin som en 
kompas efter Nordpolen. Det lidande som flöt upp var avlägsnat och rationaliserades snabbt 
bort. Självkontrollen hade bottenfryst alla känslor. Att vara närvarande här och nu var det 
viktigaste.” (Hildebrandt, 2001:103-105)
Two literary texts, read in grade 11, and nine social science texts from
grades 5 and 8, belong to this abstraction type. Compared to the HLL and
ILL, texts these texts focus less on specific animate main characters, and
more on groups of persons and objects. This is also a feature of the literary
texts of this abstraction type. Even though there are main characters in these
texts, the largest cohesive chains concern in both texts objects. In six out of
eleven texts there are no cohesive chains focused on specific animate charac-
ters at all. The cohesive chains about persons that do occur are mostly short,
i.e. only a small part of all referents of the text belong to this cohesive chain.
In the social science texts the persons referred to are historically or relig-
iously important and possibly rather far away from the lived experience of
the reader, e.g. Mikhail Gorbachev and Moses.

The other kind of specificity present in the texts is the specificity of limi-
tations of space. Eight out of 22 main cohesive chains in these texts are
about large, but geographically limited items, e.g. the Soviet Union and the
South American continent. These main referents are still specific in the sense
that they are geographically limited, but not in the sense that they are tangi-
ble. This could be looked upon as a movement towards abstraction. It is pos-
sible to imagine that you could touch or grasp the items if only you were
large enough, but you cannot actually do it. This could be seen as a transition
phase towards dealing with items in texts that you cannot even imagine be-
ing able to touch.

Other main cohesive chains in these texts, and other main focuses, are in-
stead about large or generalized groups of animate referents and objects such
as the earth, continents, religions, the Swedish nobility in the middle ages,
the revolution. Rather than being person-oriented, these texts are about
events and generalized objects, large groups of persons and things and the
abstracted features of these groups of persons and things. The following
extract gives an example of these texts:

**Goods from other parts of the world**

Even though the Europeans believed that they were superior to other people,
they wanted goods from countries in other parts of the world. Silk from
China and ivory from Africa were much sought after. But most of all the
Europeans wanted spices from India. Pepper had as high a value as silver.
Persons trading in spices could get very rich.

The Arabic tradesmen ran the spice trade. The spices were freighted by
boat from India to the Persian Gulf or the Red Sea. The spices were then
transported by camel caravan to the Mediterranean Sea. There, they were
once again freighted on ships going to some port in Italy, Spain or Portugal.

(Levande historia, åk 5)41

41 “Varor från andra världsdeler
Även om européerna tyckte sig vara överlägsna andra folk, ville de gärna ha varor från länder
i andra världsdeler. Silke från Kina och elfenben från Afrika var mycket eftertraktat. Men
The main cohesive chains in this text are countries, continents and goods. Even though the text centers the large groups of often large objects these things do exist in time and place. They are still limited in space and at least to some extent possible to touch. The chain of goods is generalized and referred to as an uncountable mass, but the goods consist of rather common items, i.e. silk and pepper. The only specific referents in this extract of the text analyzed, as in many of the IIL texts, are referents that situate the text in time and place, e.g. China or the Persian Gulf.

The shifts in the IIL texts focus on a broad variety of aspects in the texts, rather evenly distributed. The shifts have thus the function of focusing on specific persons and objects, both close to and far away from the reader. The shifts are also about situating the text in time and place and focusing on groups of persons and objects far from the reader. There are also shifts with the function of generalizing persons and objects and about expressing evaluations and classification using common abstract referents.

In this case, where the shifts in these texts display such a large range of functions, the shifts that are not represented become interesting. The shifts are not about groups of specific persons close to the reader and do not use technical abstract referents to express evaluations and classifications. It shows that even though there are specific persons in the text, these persons are not close to the reader. They are rather individual historically important persons. However, there are no technical abstract referents in the shifts. It seems like these texts have features of an everyday domain as well as a specialized domain.

6.5.4 Types and classifications, LIL texts

Only five texts have the combination of low specificity, intermediate generalization and low abstraction. Among these five texts, one was read in a Swedish literary class in grade 11. Two texts come from classes in social science in grade five. The remaining two texts are from social science classes in grade 8 and grade 11.

In the literary text with this abstraction type, the focus is no longer on a specific animate main character. There is a main character, but in the text extract analyzed in this study, this main character is backgrounded in favor of a detailed description of groups of people and groups of objects. The two largest cohesive chains are typically about a market place and the market there.
The four social science texts have as their main cohesive chains geographical territories such as Albania and the Nile, phenomena such as the French revolution and types of things such as natural resources and different kinds of wildlife.

Although the LIL texts have similarities with the IIL texts, the LIL texts have more of a focus on types and classifications. In the LIL texts there are several chains that center on a type of a phenomenon rather than specific tokens. Both the common characteristic of the instances of the chains (which makes them chains) and the instances of the chains are about types. An example of these type-chains is the chain about natural resources in Russia. Instances of this chain are *oil, natural gas, silver, and copper*. These instances are in themselves types of things or mass nouns without a more specific reference than the substance in itself. These references to general substances were analyzed as generalized in this study. But the generalization is a generalization that approaches abstraction.

The distinction between the two notions of abstraction is here at stake. As discussed above, several researchers point out the difference between the scales specific-abstract/generalized and concrete-abstract. The analysis in this study is an attempt to bring these two scales together in a three-stage analysis of specificity, generality and abstraction. Generality has been analyzed as groups of specific and concrete referents as well as generalized referents. However, a large part of the referents in the LIL texts are generalized in the sense that they are about types and not tokens, they are about hypernyms and not hyponyms. So even though the texts are to a large extent about specific and generalized referents, the generalized referents are at a rather general level. They are often about things that can be instantiated as specific and concrete, but in these texts they are often referred to as general. The following extract of an LIL text is an example of this:

**A country with vast natural resources**

No other country has such vast natural resources as Russia. There are enormous deposits of oil, natural gas and coal. There are ores that contain iron, copper, silver, gold and many other metals. Russia also has the largest forests in the world. (Nordling et al., 1996:163)

The referents *deposits of oil, natural gas and coal and ores that contain iron, copper, silver and gold* are to some extent limited: they are substances of a

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42 This is meant in a rather general sense. The distinction between hyponym and hypernym is always a relative distinction. A word that is a hyponym in relation to another word can of course become a hypernym in relation to other words.

43 “Ett land med oerhörda naturtillgångar
certain kind in Russia, but not more closely specified than that. It is possible
to imagine a more specific and concrete instantiation of the substances, e.g.
this particular silver ore from Russia, but the substances themselves are not
very highly specified.

The only shifts towards specificity found in these texts are about situating
the text in time and place. The shifts to a generalized level are about focusing
on groups of specific persons and objects close to the reader and about
generalizing persons and objects. The shifts to an abstract level are about
expressing values and classifications through common abstract referents as
well as through technical abstract referents. The features of the shifts show
that these texts have, in comparison to the IIL texts, advanced further into
the specialized domain.

6.5.5 Chemical substances and groups of objects, LHL texts

The LHL texts belong to the largest group of texts in the study. Seventeen
out of 58 or 29% of all texts, and 75% of all natural sciences texts, have a
low degree of specificity, a high degree of generalization and a low degree
of abstraction.

The subjects of the main cohesive chains are naturally influenced by the
dominance of natural science texts. In the LIL texts, dominated by social
science texts, the generalization was about types of substances such as natu-
ral resources as oil or forest. With the increasing technicality of the natural
science texts, the generalization is here to a large extent about chemical sub-
stances, e.g. ethanol and iron. The difference between the generalization in
the LHL texts and the generalization in earlier abstraction types lies in the
closeness between the generalization and specific instances of the general-
ized item. Groups of things such as precious stones or even natural resources
are quite close to specific instances such as a concrete jewel, as a forest or a
single tree. Generalized chemical substances such as ethanol are in many
cases much more distanced from a specific instantiation and from the lived
experience of reader and writer. Of course there can be exceptions between
substances, e.g. there is a difference between ethanol and iron where iron is
more common also outside the chemistry classroom. There is also naturally a
difference between the experience of readers and writers. But the overall
picture is still a joint text world where the main referents are technical and
far from everyday life. The following extract is from a natural science text in
grade eight:

    **We start by mixing two chemical substances**

    Sulphur is a chemical substance with a bright yellow color. It is not magnetic.
Iron, on the other hand, is a chemical substance that is affected by magnets. If
we mix powders of both substances, both iron and sulphur will keep their
original properties. Consequently, we could single out the powder of iron with a magnet. No matter what substances you mix, it is always possible to single out the substances in the compound in one way or another. This is because the atoms of the different substances do not bind to each other. (Paulsson et al., 1996:23-24)\(^4\)

In this extract of the text *sulphur* and *iron* are the main cohesive chains, the referents that the text is about. They are both about the general properties of a chemical substance in general. The authors of the text make an effort to situate the substances by pretending to perform certain things with the substances *If we mix powder of both substances.... But the we and the mix of the substances are imaginary or at least hypothetical. There is no actual compound of substances and there is no we to perform an actual mixing of substances. This is a typical feature of the natural science texts in all three grade levels.*

Other common main participants in the LHL texts are generalizations of more concrete and specific objects and a discussion of general characteristics of the object in questions, e.g. *squid* and *the circulatory system*. With the notion of generalization of a specific and concrete object I have in mind the reference to a type rather than to a singular instance. That is the difference between the generalized use of *heron*, referring to the species, in the sentence *The heron likes shallow lakes and marshes* and the instantiated use of *heron* in combination with a photograph, referring to a specific heron, *The heron (on the photograph) is resting*. Apart from cohesive chains about generalized objects, there are also cohesive chains about altogether abstract objects such as *elections* and *representation*. One of the two social sciences texts of this abstraction type has main cohesive chains about abstract objects.

Apart from a small percentage of shifts with a situating function, the shifts are about generalizing objects and expressing values and classifications with abstract referents. The generalizing function is about generalizing objects that are more or less specific, as discussed above. The shifts towards abstraction use common abstract referents as well as more technical abstract referents. Salient in the overall picture of shifts in texts of different abstraction types is the dominance of only three different kinds of shifts in the LHL texts. Where almost all the other abstraction types introduce new levels of abstraction in four or more ways, the LHL texts are dominated by the functions F, G and H. That is, the way new levels of abstraction are introduced by either a focus on a generalized object as referent or on an abstract com-

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\(^4\) “Först blandar vi två ämnen
mon referent or on an abstract technical referent. These texts clearly belong to the specialized domain.

Once again, the few alternatives of abstraction functions are shown in the natural science texts. One possible explanation for the similarity of the natural science texts, in comparison to the social science texts, is that they come from only two different subject disciplines; namely chemistry and biology. 8 out of the 17 texts are about chemistry, and 7 texts are about biology. The remaining 2 texts are from civics classes in grades 8 and 11. This rather homogeneous distribution of subject disciplines can be compared to the IIL texts which are from the disciplines of civics, social science, religion, history, geography, and Swedish literature classes.

6.5.6 Abstract phenomena in focus, LII texts

The LII texts, with a low degree of specificity, an intermediate degree of generalization and an intermediate degree of abstraction, are the most abstract texts in the study. Five social sciences texts and five natural sciences texts belong to this abstraction type. Interesting in this context is that while all other abstraction types have texts from all three grade levels, the LII texts are only from grades 8 and 11.

The most salient feature of these texts is the number of abstract main cohesive chains. Forty percent of the main cohesive chains are about abstract objects such as democracy and electricity. The focuses of these texts are thereby on abstract phenomena which is a noticeable difference compared to the LHL texts. The LHL texts were primarily generalized, with a dominance of generalized objects in the main cohesive chains; the LII texts have indeed generalized objects as main cohesive chains, but these chains represent 15% of all main cohesive chains while the abstract cohesive chains represent 40%. In the LHL texts the relation between generalized and abstract chains were almost the opposite (9% abstract and 35% generalized cohesive chains). A related difference between the LHL and LII texts is that while the LHL texts were about indeed highly generalized, but still clearly demarcated things, the LII texts are about phenomena. In comparison to the natural science texts belonging to the LHL type, which have dominating cohesive chains such as air, the skeleton, salt, and acid, the LII natural science texts are about phenomena such as electricity, resistance and chemical reactions. This is a shared feature of social sciences texts and natural sciences texts. The LII social sciences texts are about social phenomena such as elections and democracy, while social sciences texts belonging to other abstraction types have a country, e.g. Albania, or groups of objects, e.g. goods, as main cohesive chains.

The following extract of a LII text comes from a social sciences text in grade 11:
All countries wanting to define themselves as democracies must follow some simple rules:

· Regular political elections and free party formation: Democracy demands that political elections are held regularly and that there is at least a choice of two parties.
· Common and equal right to vote: No citizen above a certain age may be prohibited from voting on the basis of sex, ethnic group, income or religion. By equal right to vote it is understood that all votes have the same value.
· Election secret: Nobody should have to reveal what party or candidate he or she is voting for.
· Free influence of public opinion: Everybody has the right to express an opinion.
· The principle of the majority: The proposal of the majority must defeat the proposal of the minority.
· Law and order: Nobody may be punished with legal support. Lawlessness and arbitrary sentences cannot occur in a democratic country. (Bengtsson, 2000:110-111)

The texts focus is on abstract phenomena, e.g. party formation and right to vote. There is no other general subject than the abstract theme of democracy. The reference to groups of objects and things are highly generalized as citizen, and majority. The text does not refer to any specific point in time or space.

The shifts in abstraction level in the LII texts are about focusing on groups of persons and objects, generalizing and evaluating and classifying by means of abstract referents. The LII abstraction type is the only one where there are more technical abstract referents than common abstract referents as introductions to an abstract level. These texts clearly belong to the specialized domain.

6.6 Summary and conclusions

The dynamics of abstraction, that is, shifts between abstraction levels, were examined in sections 6.1-6.3. Once again, the results revealed differences across subject areas. The Swedish literary texts, with their low degree of abstraction, had few shifts between different levels. The shifts belonged

45 “Alla länder som vill kalla sig demokratiska måste följa några enkla regler:
· Regelbundna politiska val och fri partibildning: Demokratin kräver att politiska val hålls regelbundet och att det finns minst två partier att välja bland.
· Allmän och lika rösträtt: Ingen medborgare över en viss ålder får hindras från att rösta på grund av kön, ras, inkomst eller religion. Lika rösträtt innebär att alla har en röst var.
· Valhemlighet: Ingen ska behöva avslöja vilket parti eller vilken kandidat han eller hon röstar på.
· Fri opinionsbildning: Alla ska få uttrycka sin åsikt.
· Majoritetsprincipen: Majoritets förslag ska vinna över minoriteten.
· Rättssäkerhet: Ingen ska straffas utan stöd i lagen. Laglöshet eller godtyckliga domar får inte förekomma i ett demokratiskt land.” (Bengtsson, 2000:110-111)
mainly to an everyday domain. In comparison, the shifts in the social science texts are many and varied. The functions of these shifts are mixed between belonging to an everyday level and a specialized level. Finally, the highly generalized natural science texts had few shifts between different levels of abstraction. These shifts were also limited in function and belonged to a specialized domain.

In the final sections of this chapter, 6.4-6.5, I have presented a new classification of the texts, based solely on their degree of abstraction. When classifying the texts as different abstraction types, the texts’ prior classification based on subject area was ignored. However, as presented in table 19, the classification of the texts into abstraction types showed a correspondence between degree of abstraction and subject area. The abstraction type with the lowest degree of abstraction, the HLL texts, consisted only of Swedish literary texts. In the abstraction type with the highest degree of abstraction, the LII texts, only social science and natural science texts were represented. A comparison between abstraction types and subject areas from the opposite perspective shows that the Swedish literary texts are distributed across four different abstraction types. The social science texts are distributed across five different types. The natural science texts are more alike in this respect and can be found in only two different abstraction types. A comparison between abstraction type and grade level showed that, except for the most abstract type, the LI texts, all grade levels were represented in all abstraction types.

In section 6.5, a closer portrayal of the different abstraction types was made, and by using the analysis of cohesive chains, it was possible to observe a connection between different abstraction types and the text content.

The results of the investigations in the chapter point towards some final conclusions:

As mentioned, although the texts in this study are more or less specific, more or less general and more or less abstract, the vast majority of the texts contain referents from all three levels of abstraction. This means that a comprehension of texts as being either specific/concrete or generalized/abstract needs to be complemented by a more nuanced understanding of abstraction within texts. In this context, the movement between levels of abstraction itself becomes interesting. In the investigation of shifts between abstraction levels, it was evident that the social science texts had more varied entry points to different levels of abstraction than did the other subject areas. The final classification of abstraction types points in the direction of a connection between different abstraction types and text content in general. The students’ reading of texts with different degrees of abstraction will be described in chapter 8. In the following chapter I will focus on the relationship between the author and the reader.
CHAPTER 7
The relationship between author and reader in textbook texts

In previous chapters the focus has been the transition towards an adult, specialized literacy in school in general, and especially through the increasing abstraction in textbook texts. Another aspect of interest, in this transition, is the interlocutors in the process. The relationship between the authors and readers of textbooks has consequences for the texts in different ways.

A characteristic feature of all texts with children as intended readers is the asymmetrical relationship between reader and writer (e.g. Westin, 1998). Textbooks in schools are typically written by adults with a child or adolescent as the intended reader. But to say that school-based texts are altogether intended for children is not the whole truth. It is not children and adolescents who buy and sell the texts that are used in school. Adults execute all economic transactions related to texts, both as sellers and as buyers and therefore adults, e.g. teachers, have the power to choose textbooks. Authors of school-based texts are naturally aware of this situation and consequently adapt to it. So even though a young person is the overtly intended reader of a text, an adult reader is always present in the background.

To some extent an asymmetrical relationship between author and reader is natural in a context of schooling. Kress (1989) suggests that there is an element of tension in every encounter between an individual’s prior history of discourse and a text written within a certain discourse. This tension, difference, is a motivation for producing texts and all texts are created through difference. The difference could consist of difference in knowledge between author and reader, or difference in age, power, social status or ethnicity.

A difference in knowledge between author and reader in the context of school-based texts constitutes a fundamental but nevertheless important motivation for writing and reading these texts. Textbook authors should know more about their subject than does their intended readership; otherwise they will prove a poor choice of author. But an asymmetrical relationship between author and reader, and the role that textbooks play in a context of schooling, have other consequences. In this chapter I will discuss how the relationship between author and reader influences the way in which knowledge is presented in textbooks. The aim of this chapter is to compare mood...
and modality in the Swedish social science texts from upper secondary level, with the modality in corresponding Spanish and English texts from McCabe’s study. I will also compare the modality in the Swedish texts from different grade levels and from to different subject areas (social science and natural science). The later sections of this chapter will describe how the reader is explicitly addressed in the texts and discuss dialogical features in textbook texts.

7.1 The asymmetrical relationship between author and reader

Compared to other academic texts, textbooks seem to present propositions without hedging to a higher degree (e.g. Latour and Woolgar, 1979, McCabe 2004). Compared to text types such as casual conversation, newspapers and academic texts, textbooks typically present knowledge in a more authoritative and less dialogical way. One way to describe authoritative stances in a text is to analyze the interpersonal themes. In accordance with the framework of systemic-functional grammar, McCabe defines interpersonal themes as “some interpersonal element in initial position of the clause”, for example modal adjuncts and initial finite modal operators (McCabe, 2004:14).

In order to compare the degree of authoritativeness in different genres, McCabe compiles results from various investigations of interpersonal themes.

Table 20. Interpersonal theme results from different studies (McCabe 2004:15)

<table>
<thead>
<tr>
<th>Genre</th>
<th>Percentage per total number of all clauses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone conversations</td>
<td>22.43%</td>
</tr>
<tr>
<td>Linguistic texts</td>
<td>8.84%</td>
</tr>
<tr>
<td>Economics texts</td>
<td>8.56%</td>
</tr>
<tr>
<td>Sports reports</td>
<td>6.11%</td>
</tr>
<tr>
<td>The Sun editorials</td>
<td>3.60%</td>
</tr>
<tr>
<td>History textbooks (McCabe)</td>
<td>2.88%</td>
</tr>
<tr>
<td>The Times editorials</td>
<td>1.80%</td>
</tr>
<tr>
<td>History textbooks (Taylor)</td>
<td>0.63%</td>
</tr>
<tr>
<td>Science textbooks</td>
<td>0.08%</td>
</tr>
</tbody>
</table>

Although McCabe admits that the analysis made by the different researchers might vary to some extent, the overall ranking of the different genres seems reasonable. From an interpersonal point of view, the low degree of interpersonal themes in textbook texts has been regarded as a consequence of the construction of authority and the asymmetrical relationship between author and reader in this specific text type.
Textbooks in general seem then to present knowledge in a way that is assertive and without openness towards alternative interpretations of reality. Many researchers have discussed the alleged ‘objectivity’ of textbook texts, in science texts as well as in texts from other subject areas such as history. Coffin (1997:198) suggests that history textbooks aim to “construct the writer as a disinterested arbitrator of knowledge whose position on the past is fluid and open and who can, therefore, offer an objectively derived ‘true’ account of the past”. The subject area of history has been described as a textual practice, used to persuade the reader of the truthfulness of the message, no matter what it is (Blanco and Rosa, 1997).

The presentations of knowledge in other subject areas have also been objected to in a similar way. From the subject area of science, Hunston (1994:193) describes the purpose of textbook text:

> to be convincing, what is persuasion must appear only to be reportage. It follows that the evaluation through which the persuasion is carried out must be highly implicit and will, in fact, avoid the attitudinal language normally associated with interpersonal meaning.

Knain (2001) criticizes Norwegian science textbooks for presenting knowledge as stemming directly from nature itself:

> In the subject of science we should however strive to not have students view knowledge as stemming directly from experiments, but as coming from critical discussion where observations and experiments have a natural place in science. (Knain, 2001:27)\(^\text{46}\)

A view of scientific knowledge as something that emerges naturally from natural data leaves students without any tools to discuss and reflect critically on scientific research as an activity invented and performed by human beings. Selander (2001) suggests that this increased focus on the critical reflection of scientific activities can be seen in Swedish science curricula. However, another issue is whether it is visible in the classroom activities and in the textbooks.

The motive for presenting knowledge in an assertive way is obvious. Halliday (1996:364-365) discusses the motives of the authority given to textbooks and writes “If they [textbooks] are to function effectively, the readers they are addressed to must believe in what they say”. As long as this is the main viewpoint on texts used in education, there is little scope for expressing diverse views on e.g. historical events.

\(^\text{46}\) “I naturfaget bør vi imidlertid etterstrebe at elever ikke ser kunnskap som noe som kommer direkte fra data som naturen tvinger fram gjennom eksperimenter, men kunnskap kommer fram gjennom kritiske diskusjoner hvor observasjoner og eksperimenter har en nødvendig plass i naturvitenskapen.” (Knain, 2001:27), AE:s translation
In this context, it is noteworthy that the content area textbooks are supposed to function as a transition into an adult specialized discourse. In academic writing at a university level it is crucial that writers take into account claims by their peers and “position themselves and their work with respect to those claims” (McCabe, 2004:2-3). In other words it is important to authors in an academic setting to demonstrate openness towards other possibilities. In this sense, the textbooks’ assertive way of presenting knowledge is not an appropriate way of introducing students to more advanced academic meaning-making.

7.2 How can the relationship between author and reader be analyzed in texts?

Research has shown that textbook texts, mostly from the English-speaking countries, can be described as overly assertive and authoritative in their way of presenting knowledge. An interesting question is then whether the Swedish textbook texts are written in a similar way. In this section of the chapter I will briefly describe some of the different ways of analyzing author/reader relationship. Thereafter I will give a more detailed description of McCabe’s model for analyzing mood and modality in history textbooks and apply this model in an analysis of the relationship between reader and author in the Swedish textbook texts.

7.2.1 Explicit reference to authors and readers in text

An author’s stance in a text can be described and measured in many ways. A first, broad analysis of text roles in text could be to analyze the explicit and visible realizations of the reader and writer in a text (i.e. Gunnarsson, 1987, McCabe, 2004). Examples of how the reader and writer are explicitly referred to in a text, are through the use of pronouns (I, you), and through questions and imperatives.

Even though an analysis of this kind provides a first impression of how a reader is addressed in a text, the need for a more detailed analysis is obvious. Modality can also be expressed in different ways. Halliday (1994:355) describes expressions of probability through the following categories:

- Objective (explicit) – It is obvious that these results are in error.
- Objective (implicit) – Clearly these results are in error.
- Subjective (explicit) – I believe that these results are in error.
- Subjective (implicit) – These results must be in error.

The meaning is more or less the same in these sentences, but each category gives a different perspective on reader/author relationship.
Schleppegrell (2004:101) states that the preferred choices along the option of objective/subjective and explicit/implicit vary from context to context. “In some contexts, the more objective choices are considered too impersonal, and the subjective options are preferred.” For example, in science discourse an objective choice is preferred. Students who write science texts with more explicit and subjective choices of probability give a less scientific impression.

7.2.2 Mood and modality

Schleppegrell (2004) identifies mood as a major resource for establishing stance in texts. A basic selection of mood as declarative, interrogative or imperative is about presenting the author as someone who states, questions, or demands. Each choice implies a different relationship between speaker-listener or writer-reader. Schleppegrell (2004:58) states that conversation typically has a varied mood structure where “speakers share information and question and urge each other.” However, interaction is not a dominant feature of school-based texts, either in their creation, or in their interpretation. School-based texts rather need a structure that enables the author to present him/herself as assertive, knowledgeable and providing objective information. A typical mood choice in academic texts is subsequently declarative.

Apart from mood, modality is used as an indicator of the reader/writer relationship in research on textbooks. Modality in general can be regarded as expressing the speaker’s attitude to the proposition in the utterance. Traditionally, modality is divided into two kinds, epistemic modality and deontic modality (e.g. Lyons, 1977, Saeed, 1997). Epistemic modality concerns how much certainty or evidence a speaker has for the proposition expressed by her or his utterance (All examples from Saeed, 1997:126).

She must have left by now.

Deontic modality is modality that connotes the speaker’s attitude to social factors of obligation, responsibility and permission.

You should take these books back.

However, the distinction between epistemic and deontic modality is not always clear, but admits shades and overlaps (e.g. Givón, 2001). In one major area, irrealis modality, epistemic and deontic modality overlap to the extent of sharing the same grammatical coding. Saeed (1997:126) points out utterances such as

You can drive this car.
can be interpreted either as epistemic modality with the interpretation (i) or as deontic modality in (ii):

(i) It is possible for you to drive this car

(ii) You have my permission to drive this car

Halliday (1994:89-92) makes a distinction between different types of modality that is similar to the epistemic-deontic. Modality in general is regarded as an aspect of the interpersonal metafunction within the SFL framework (Holmberg, 2002). Depending on the commodity which is exchanged in the conversation or in the text, he distinguishes between modalization – propositions concerning the exchange of information, and modulation – proposals concerning the exchange of goods and services. Modalization, as in They certainly knew, has similarities with epistemic modality while modulation, as in You must be patient, is more equivalent to deontic modality.

Modality is obviously marked in a different ways in different languages. An example of this is Aijmer’s (1996) contrastive investigation of epistemic modality where she states that there is a difference between epistemic modality in English and in Swedish. Another example is Viberg’s (2002) description of the Swedish verb få and its translation into English.

In research about textbooks texts, modality is often used as an indicator of authoritativeness. The basic assumption is that texts with few expressions of modality give an impression of a detached and ‘objective’ style, where the author is less visible. The reader of these texts is given a position as receiver of facts (Knain, 2001). Texts with many markers of modality, on the other hand, give an impression of a human agent behind the words. The knowledge expressed is presented as more tentative, discursive and nuanced.

In a comparative study of American and Spanish history textbooks McCabe (2004) investigates how writers employ linguistic resources to construct this relationship of authority between writer and reader. More specifically she investigates at a clause level the mood and modality of the clause. She holds that the choice of a modalized versus an unmodalized declarative has consequences for the mediation of knowledge between the author and the reader. She concludes that

The central issue here is to what extent the textbook writers make clear to their readers through their linguistic choices that what they are presenting is an interpretation. (McCabe 2004:3).

Compared to an analysis of explicit and visible features of an author and an addressed reader, mood and modality provide tools for a more detailed analysis.

However, evaluation in text can be analyzed in an even more detailed way. A more in-depth analysis of stances taken in texts is Appraisal theory.
Appraisal is “a set of systems which give language users choice in terms of how they appraise, grade and give value to social experience” (Coffin, 1997:205). The theory has its theoretical foundation in systemic-functional linguistics and a more practical ground in the development of Australia’s genre-based literacy programs (Martin, 2003). Within the related “Write it Right” project, where written discourse in key learning areas was analyzed, evaluative meaning stood out as a key feature in characterizing the different discourses. The Appraisal framework was then developed in order to provide descriptive tools for the area of interpersonal meaning.

The framework of Appraisal is oriented towards discourse semantics rather than lexicogrammar. The realizations are therefore from varying lexicogrammatical levels. One advantage of the Appraisal framework is its capability to describe many perspectives of evaluation, both implicit and explicit.

However, detailed analysis is time-consuming to carry out in its entirety on large amounts of data. Since the analysis of the relationship between author and reader is only a minor part of the thesis as a whole, I will use a more restricted analysis of modality. McCabe’s analysis of mood and modality, earlier described, will be used in an analysis of the Swedish textbook texts. An advantage of this model is the clear focus on mood and modality, which earlier research has shown to be important to the relationship between author and reader. Another obvious reason for choosing this model is the possibility of comparing the results of the Swedish textbook text with the results from English and Spanish texts.

7.2.3 McCabe’s model of mood and modality in textbooks

In this section I will compare McCabe’s analysis of English (used in the U.S.A.) and Spanish textbooks with a related analysis of Swedish textbooks. In order to do so, I will start by giving a more detailed account of McCabe’s categories.

In a study of English and Spanish history textbooks, McCabe analyzes instances of mood as well as modality. Her first hypothesis concerns mood and she states that since “the primary overt objective of textbooks is to provide information” the declarative mood would be predominant. In the second hypothesis about modality, she suggests that modality will be minimized, since textual markers of modality would work against a “display of factuality” and thus undermine the authority of the statement. These hypotheses are tested in a corpus of texts from history textbooks written for upper-secondary level in the U.S.A and in Spain (students typically 15-18 years of age). The analyzed unit is the clause complex, i.e. inde-

47 Folkeryd (forthcoming) is analyzing students’ texts from the same project, Students’ encounters with different texts in school, from the perspective of the Appraisal framework.
pendent clauses together with their dependencies. These clause complexes were analyzed for mood as declarative, interrogative or imperative. Three categories of modalized expressions were then analyzed: modal adjuncts, metaphoric modality and finite modal operators.

Modal adjuncts, in the first category, are expressions, mostly adjectives and adverbs, added to clauses with the aim of expressing attitude, e.g. actually, generally and probably.

Metaphoric modality is a label for constructions used in order to express opinions or stances more indirectly. McCabe (2004:5-9) examines three types of metaphoric modality:

I Impersonal projecting clauses, where an impersonal ‘it’ appears in a subject position as a place marker for the extraposed clause, often followed by a judgment adjective.

“It is possible that woman played a crucial part in the discovery and nurturing of early agriculture.”

II Clauses that introduce a nominalized modal structure by means of an existential structure.

“…but there is no (clear) evidence that women exercised political rule.”

III Personal projecting clauses of mental and verbal processes.

“Some archaeologists even hold that some cities were formed not for the sake of local agriculture but as trading centers.”

Finite modal operators, McCabe’s third category, concern in English a variety of operators, attached to the verbal groups as separate words; i.e. might – we might go. Spanish uses inflections, as well as separate words as finite modal operators; podríamos ir (= we might go).

McCabe is not very clear when it comes to defining modality in her investigation in relation to the traditional distinction epistemic-deontic modality or Halliday’s distinction between modalization-modulation. The examples she mentions are mostly clear examples of modalization/epistemic modality. As mentioned earlier the categories of epistemic and deontic modality, and modalization and modulation, are also known to sometimes overlap. Some of the examples McCabe gives can be interpreted as expressing either modalization or modulation. For example:

María debe de estar jugando

María tiene que estar jugando

48 Since McCabe in general uses tools from the SFL framework, perhaps the latter distinction is more relevant in this discussion.
They can be interpreted as either Maria ought to be playing /Maria has got to be playing in the deontic sense or María is probably playing in the epistemic sense.

The examples McCabe gives, as well as the overall purpose of the article, i.e. to examine how textbook writers present history as more or less open to interpretation, point in the direction of modalization/epistemic modality.

Modulation/deontic modality is by no means irrelevant to the relationship between author and reader. Actions such as commanding, recommending, instructing and prohibiting naturally have consequences for the relationship between the persons involved. In my opinion, it is clear that it is the author who performs and has the right to perform these actions in a textbook context. And naturally, the medium per se makes these actions possible in only one direction. However, it is also a part of the institutional context of schooling. Even though modulation/epistemic modality would be an interesting aspect in the analysis of the textbook text, the focus in this work is on how the relationship between author and reader is reflected in the way knowledge is presented in the texts. And from that perspective, it is the modalization/epistemic modality which is of focal interest.

7.3 Analysis of mood and modality in the textbook texts
7.3.1 The textbook corpora

In McCabe’s study, the Spanish textbook corpus consists of ten different texts. Taken together, there are 1263 clause complexes and 28617 words. The American corpus consists of ten texts with all together 1496 clause complexes and 26861 words. All texts are extracts from history textbooks written for upper-secondary level in the U.S.A. and in Spain.

In the analysis of mood and modality in the Swedish textbook texts previously mentioned, I will only discuss the texts from social science and natural science. In this context, the Swedish literary texts analyzed and described in earlier chapters are difficult to interpret in the same way as the content area texts, because of their narrative character. Compared to the content area texts in social science and natural science, the relationship between author and reader in these texts is an altogether different one. The motives for reading narrative texts in school are different than the motives for reading content area texts, and the relationship between reader and author is impacted by these pedagogical implications.

As earlier described, the Swedish content area texts (i.e. the social science texts and the natural science texts) which I have analyzed are differently collected than McCabe’s textbook corpora. The Swedish texts consist of 41

49 The analysis of explicit reference to reader and author in the section 7.5, will also only be made on the social science and natural science texts.
texts from grades 5 and 8 and grade 11. The texts are from classes in social science and natural science. In the Swedish compulsory school the texts from social science in these classes are in the subjects of religion, history, geography and civics. The natural science texts are from physics, chemistry and biology classes. All together, the social science texts consist of 9 247 words and the natural science texts of 9 842 words, and the amount of data is thus notably smaller than McCabe’s corpora.

Table 21. Number of words and independent clauses in texts from different grade levels and subject areas

<table>
<thead>
<tr>
<th>Grade 5</th>
<th>Grade 8</th>
<th>Grade 11</th>
<th>Total:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>words clauses</td>
<td>words clauses</td>
<td>words clauses</td>
</tr>
<tr>
<td>Social science</td>
<td>2805 269</td>
<td>3835 336</td>
<td>2607 189</td>
</tr>
<tr>
<td>Natural science</td>
<td>2506 243</td>
<td>4869 400</td>
<td>2467 201</td>
</tr>
</tbody>
</table>

In my study, it is the texts from grade 11 which most directly correspond to McCabe’s corpus. They are relatively few in number, five different texts from social science classes, among them history, from grade 11. However, the diversity of texts from different levels makes other comparisons possible.

7.4 Results of an analysis of modality and mood

As mentioned in the beginning of the chapter, the first aim of my study is to compare mood and modality in the Swedish social science texts from upper secondary level, i.e. grade 11, with the modality in the corresponding Spanish and English texts from McCabe’s study. Even though the corpora are different, some comparisons can be made.

In addition to this, I will also compare the modality in texts from different grade levels (grade 5, 8 and 11).

A third aim is to compare the mood and modality in the natural science texts to the mood and modality in the social science texts across grade levels.

7.4.1 Modality

McCabe’s analysis of modality involves modal adjuncts, metaphoric modality and finite modal operators per independent clause. Her results display a very similar pattern of modality in the English texts and in the Spanish texts. Compared to the English and Spanish texts, the Swedish texts from grade 11 have a higher degree of modality per independent clause:
Table 22. Modality in upper-secondary history text from McCabe’s Spanish and English corpus compared to the modality of the Swedish social Science texts

<table>
<thead>
<tr>
<th>Modality</th>
<th>English corpus</th>
<th>Spanish corpus</th>
<th>Swedish corpus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modal adjuncts</td>
<td>10.7%</td>
<td>9.3%</td>
<td>8.5%</td>
</tr>
<tr>
<td>Metaphoric modality</td>
<td>3.9%</td>
<td>4.0%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Finite modal operators</td>
<td>5.8%</td>
<td>7.5%</td>
<td>14.3%</td>
</tr>
<tr>
<td>Total modality</td>
<td>20.3%</td>
<td>20.8%</td>
<td>29.7%</td>
</tr>
</tbody>
</table>

Compared to the Spanish and American texts, the Swedish texts display a generally higher degree of modality. The most notable difference between results lies in the number of finite modal operators. Because of the limited number of Swedish texts, this could be an accidental occurrence due to the selection of texts. One of the analyzed texts has a high number of finite modal operators and with the small number of texts, the total result is influenced. The text is written in a rather colloquial style:

In democratic states people can disagree about most things, but not about the value of the right to express an opinion. With very little exaggeration you can say that democracy is built on disagreement and conflict. In a democracy the people have the power. The people can practice this power in two ways, directly or indirectly. (Almgren et al., 1996:95)

Table 23. Modality in the Swedish social Science text in different grade levels

<table>
<thead>
<tr>
<th>Modality</th>
<th>Grade 5</th>
<th>Grade 8</th>
<th>Grade 11</th>
<th>Average:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modal adjuncts</td>
<td>4.8%</td>
<td>4.2%</td>
<td>8.5%</td>
<td>5.8%</td>
</tr>
<tr>
<td>Metaphoric modality</td>
<td>5.6%</td>
<td>5.1%</td>
<td>6.9%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Finite modal operators</td>
<td>3.0%</td>
<td>2.7%</td>
<td>14.3%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Total modality</td>
<td>13.4%</td>
<td>12.0%</td>
<td>29.7%</td>
<td></td>
</tr>
</tbody>
</table>

Even though the small amount of data can be one explanation of the high degree of finite modal operators in grade 11, there is another interpretation. Earlier research has shown that other academic texts display more hedging.

of propositions than textbooks do. From this respect, the results from grade 11 could be interpreted as a step towards a more interpretative, and less authoritative stance towards the propositions expressed, i.e. that of texts at higher levels of education. Coffin (2001) suggests that the degree of modality in genres in earlier grades of history is lower than the degree of modality in genres typical to history textbook in higher levels of schooling.

As mentioned, the natural science texts are also included in our study of texts and their readers. In comparison to the results in table 23, the following results can be added:

Table 24. Modality in the Swedish natural science texts in grade 5, grade 8 and grade 11.

<table>
<thead>
<tr>
<th>Modality</th>
<th>Grade 5</th>
<th>Grade 8</th>
<th>Grade 11</th>
<th>Total:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modal adjuncts</td>
<td>6.2%</td>
<td>8.5%</td>
<td>7.0%</td>
<td>7.2%</td>
</tr>
<tr>
<td>Metaphoric modality</td>
<td>0.8%</td>
<td>1.5%</td>
<td>0.5%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Finite modal operators</td>
<td>10.7%</td>
<td>13.5%</td>
<td>11.9%</td>
<td>12.0%</td>
</tr>
<tr>
<td><strong>Total modality</strong></td>
<td><strong>17.7%</strong></td>
<td><strong>23.5%</strong></td>
<td><strong>19.4%</strong></td>
<td></td>
</tr>
</tbody>
</table>

It is interesting to note the degrees of metaphoric modality and of finite modal operators in these texts, in comparison with the social science texts. Metaphoric modality was defined as “constructions used in order to express opinions or stances more indirectly”. The natural science texts have a much lower degree of metaphoric modality than the social science texts in all three grade levels. A likely explanation for this difference can be found in the knowledge expressed. The basis for the history subject is interpretation, while a science discourse often presents natural facts as stemming from nature itself (i.e. Knain, 2001). In an area of knowledge based on interpretation, metaphoric modality in expressions such as “Some archaeologists even hold that …” plays a natural role. In a natural science discourse, where the knowledge traditionally is presented as a ready-made product, these expressions of indirectly expressed opinions are down-played.

In contrast to the degrees of modal adjuncts and metaphoric modality, the degree of finite modal operators is higher in the natural science texts, in comparison the social science texts. A possible explanation could lie in the hypothetical experiments which often form part of the texts in natural science. The extracts from a chemistry text in grade 8 is an example of this:

“Once the reaction has started you can remove the flame.”
“If we mix powder of both substances, iron as well as sulphur will keep their original properties. Consequently, we could single out the powder of iron with a magnet.” (Paulsson et al., 1996:23-24)

These expressions, and other similar ones, express epistemic modality in the sense that the specific experiment is not actually carried out by anyone. However, these expressions do not nuance the presentation of the text content and do not in that sense promote a greater openness towards alternative interpretations.

7.4.2 Mood
The results obtained by McCabe in her analysis of mood choices can be compared to the results from the Swedish texts. The unit of analysis is independent clauses.

Table 25. Mood in the English and Spanish history texts and in the Swedish social science texts (grade 11).

<table>
<thead>
<tr>
<th>Mood</th>
<th>English corpus</th>
<th>Spanish corpus</th>
<th>Swedish corpus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Declarative</td>
<td>98.2%</td>
<td>99.4%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Imperative</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Interrogative</td>
<td>1.7%</td>
<td>0.6%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

The choice of mood, in the Spanish and American corpora as well as in the Swedish, is predominantly the declarative. In the Swedish social science texts from grade 11 all the clauses are in a declarative mood.

This is in accordance with the informative nature of the texts, where the aim is to present information rather than to interact with the reader. However, the results from social science texts from earlier grade levels in the Swedish corpus look slightly different:

Table 26. Choices of mood in texts from social science

<table>
<thead>
<tr>
<th>Mood</th>
<th>Grade 5</th>
<th>Grade 8</th>
<th>Grade 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Declarative</td>
<td>96.7% (260)</td>
<td>97.8% (327)</td>
<td>100.0% (189)</td>
</tr>
<tr>
<td>Imperative</td>
<td>0.4% (1)</td>
<td>0.3% (1)</td>
<td>0.0% (0)</td>
</tr>
<tr>
<td>Interrogative</td>
<td>3.0% (8)</td>
<td>2.1% (7)</td>
<td>0.0% (0)</td>
</tr>
</tbody>
</table>

---

När reaktionen väl har startat kan man ta bort lågan.” (Paulsson et al., 1996:23-24)
Examples of imperatives:

- Look carefully at the pictures of the earth. (grade 5)
  (Titta noga på bilderna av jorden.)

- This is not allowed. (grade 8)
  (Så här får man väl inte göra.)

Examples of interrogatives:

- Why do we read the Old Testament? (grade 5)
  (Varför läser vi Gamla testamentet?)

- Who is allowed to vote? (grade 8)
  (Vilka får rösta?)

Even though the declarative mood dominates in all three grades levels, the texts from grades 5 and 8 have a slightly higher degree of interrogatives and imperatives. The natural sciences texts display a similar pattern:

Table 27. Choices of mood in natural science texts

<table>
<thead>
<tr>
<th>Mood</th>
<th>Grade 5</th>
<th>Grade 8</th>
<th>Grade 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Declarative</td>
<td>97.5% (237)</td>
<td>95.5% (382)</td>
<td>99.5% (200)</td>
</tr>
<tr>
<td>Imperative</td>
<td>0.4% (1)</td>
<td>1.8% (7)</td>
<td>0.0% (0)</td>
</tr>
<tr>
<td>Interrogative</td>
<td>2.1% (5)</td>
<td>2.7% (11)</td>
<td>0.5% (1)</td>
</tr>
</tbody>
</table>

Examples of imperatives:

- Think about how vital oxygen is. (grade 5)
  (Tänk bara på det livsviktiga syret.)

- Feel for yourself! (grade 8)
  (Känn efter!)

Examples of interrogatives:

- Can we run out of air? (grade 5)
  (Kan luften ta slut?)

- But what is the opposite of acidic? (grade 8)
  (Men vad är motsatsen till surt?)

- Why is water so important? (grade 11)
  (Varför är vatten så viktigt?)
But what is the function of interrogatives in textbook texts? And why do the texts in grades 5 and 8 show instances of interrogatives while the texts from grade 11 do not? One possible account for these results could be found in the author’s dialogical attempt.

7.5 Dialogical features in textbook texts

It may be that the existence of instances of an interrogative mood in grades 5 and 8 has to do with a belief that younger children are supported in their learning by interactional resources. Questions and imperatives directed to the reader are from this perspective meant to increase the interest in a discursive text. The following extract from a history text about the Old Testament, written for grade five, can be seen as an example of this:

**The Old Testament**

*Why do we read the Old Testament?*

In grade 4 you read in the New Testament about Jesus and his people, the Jews. Jesus was a Jew and his people the Jews lived in this time in Palestine which you can see on the map. Here, I will tell you about the ancient history of the Jews, which is written in the Old Testament. Why is it so important? (Lindh & Söderberg, 1991:82-83)

The reader is directly referred to as you and a we that includes both the author and the reader is also used. Direct questions are also posed to the reader “Why do we read the Old Testament?” Even the author is explicitly referred to in this text, not only in the more general and inclusive ‘we’, but as an active agent in “In this chapter I will tell about the ancient history of ...”

An investigation of explicit references to reader and author showed that the degree of dialogical features in the text about the Old Testament is not unusual. The features of explicit reader and author address analyzed were:

- explicit reference to a reader as ‘you’
- direct questions posed to a reader
- explicit reference to an author as ‘we’ or ‘I’

52 “Gamla testamentet
Varför läser vi Gamla testamentet?
The basic analysis of these features was carried out in the project *Students’ encounters with different texts in school*. In the analysis of explicit references to reader and author in the texts, I have focused on a text level, in order to see if a text as a whole contains explicit references to a reader or an author. An analysis of the social science texts gives the following occurrences of these features:

**Table 28. Occurrences of explicit references to reader and author in the social science texts**

<table>
<thead>
<tr>
<th></th>
<th>Grade 5</th>
<th>Grade 8</th>
<th>Grade 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>explicit reference to a reader as ‘you’</td>
<td>occurrence in 2 of 7 texts (29%)</td>
<td>occurrence in 4 of 9 texts (44%)</td>
<td>occurrence in 1 of 5 texts (20%)</td>
</tr>
<tr>
<td>direct questions posed to a reader</td>
<td>occurrence in 4 of 7 texts (57%)</td>
<td>occurrence in 4 of 9 texts (44%)</td>
<td>no occurrence (0%)</td>
</tr>
<tr>
<td>explicit reference to an author as ‘we’ or ‘I’</td>
<td>occurrence in 4 of 7 texts (57%)</td>
<td>occurrence in 5 of 9 texts (56%)</td>
<td>occurrence in 3 of 5 texts (60%)</td>
</tr>
</tbody>
</table>

There seems to be a difference between grade 8 and grade 11 when it comes to the degree of explicit reference to the reader. In social science, 7 out of 16 texts in grades 5 and 8 have no explicit address to the reader. All the other texts have some kind of direct reference to the reader, either by the use of a generalized *you* as in *In grade 4 you read about Jesus and his people, the Jews, in the New Testament* or through direct questions as *Why do we read the Old Testament?* Half of the texts also have a visible author expressed by the use of ‘*I*’ referring to the author, ‘*we*’ referring to both author and reader and explicit answers to questions in the text. In grade 11, only one text in five has an explicit reference to the reader as *you*. No text contains direct questions to the reader.

An analysis of the natural science texts is presented in table 29:

**Table 29. Occurrences of explicit references to reader and author in the natural science texts**

<table>
<thead>
<tr>
<th></th>
<th>Grade 5</th>
<th>Grade 8</th>
<th>Grade 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>explicit reference to a reader as ‘you’</td>
<td>occurrence in 2 of 5 texts (40%)</td>
<td>occurrence in 5 of 9 texts (56%)</td>
<td>occurrence in 2 of 5 texts (40%)</td>
</tr>
<tr>
<td>direct questions posed to a reader</td>
<td>occurrence in 4 of 5 texts (80%)</td>
<td>occurrence in 6 of 9 texts (67%)</td>
<td>occurrence in 1 of 5 texts (20%)</td>
</tr>
<tr>
<td>explicit reference to an author as ‘we’ or ‘I’</td>
<td>occurrence in 4 of 5 texts (80%)</td>
<td>occurrence in 9 of 9 texts (100%)</td>
<td>occurrence in 4 of 5 texts (80%)</td>
</tr>
</tbody>
</table>
Especially the direct questions occur more seldom in grade 11 in comparison to grade 5 and grade 8. Only 3 texts out of 15 completely lack explicit reference to the reader. Eleven texts out of 15 natural science texts in grades 5 and 8 had at least one instance of address to a generalized reader expressed by a generalized ‘you’, a ‘we’ that included both author and reader, questions and instructions intended for the reader. In grade 8, as many as 7 texts out of 9 had explicit references to the reader. An example of this kind of texts that combines a colloquial reference to a teenage reader with a technical description of chemical substances is presented below.

Do you remember that you could call hydroxide ions “broken water molecules”, where hydrogen ions were missing? What do you think happens when you blend the two solutions? Well, the acidic hydrogen ions and the basic hydroxide ions are joined and become water!

The ready-made solution is neither a base nor an acid. The base and the acid have neutralized each other. The reaction is called neutralization. (Ekdahl et al., 1995:114-115)

Like the texts in social science, the natural science texts in grade 11 had fewer instances of direct reader reference.

7.5.1 Dialogical features in texts in order to enhance readability

The impression given by these texts is that the explicit references to the reader, as well as the visible author, are expected to increase the students’ engagement in the texts and to enhance readability. Beck and McKeown (2001) describe a study of how students react to manipulated texts with increased ‘voice’. They revised textbook texts with respect to coherence and increased the ‘voice’ in texts by increasing what they label activity, orality and connectivity. Beck and McKeown (2001:228) defines the features as:

Activity involves making text situations more dynamic by using verbs that represent more concrete actions and by portraying the immediacy of events and reactions of human agents rather than portraying passive states involving collective and vague agents. Orality involves including some of the conversational tone of oral language, including colloquial expressions and emphatics, as well as explicit dialogue. Connectivity involves highlighting several kinds

---


54 These results could be compared to the degree of interactional features in the literary texts. In these texts, both grade 5 and grade 8 texts, very few addresses to reader were identified. The few addresses that existed were rhetorical questions. The authors were rather invisible in most texts; 2 out of 12 had an explicit ‘I’ referring to the author.
of relationships, including making connections between the reader and the text.

In revised versions of texts they increased the texts’ activity, orality and connectivity. In their study, students were presented with both revised and unrevised texts. Their results showed that the students’ comprehended the revised versions of the texts better than the unrevised ones.

A similar study of Swedish textbook texts was done by Reichenberg (2000). She modified textbook texts with reference to voice and causality and compared the different versions of the same text on groups of students. The comparison of reading comprehension tests on L1 and L2 readers showed that especially the L2 readers benefited from the revised text and scored higher on the test. Particularly, the combination of increased voice and increased causality improved the results on the reading comprehension test. The L1 readers did not demonstrate significantly higher scores on the test.

However, another study of L2 readers done by de la Luz Reyes (1987) did not show any improvement in reading comprehension after reading texts were revised with respect to voice.

7.5.2 Criticisms of dialogical features in textbook texts

The brief analysis of the Swedish textbook texts showed that they display features of an explicit reader–author relation.

In a multi-dimensional analysis of primary school reading materials, Biber (1991) focused on linguistic features associated with interaction, involvement, reduction in form, informational density, referential elaboration, situation dependence and passive style. In this study, Biber compared the characteristics of primary school reading materials with adult spoken and written genres in English. Biber found a high degree of interactive and involving features in a second grade science text. These features involved first and second person pronouns and questions marks. Along a scale of involvement, the second grade science text had the same degree of involvement as personal letters. The fourth and sixth grade science texts showed a smaller degree of features of involvement.

When it comes to an analysis of the dimension of abstract style, Biber notes that most of the school texts in the study have markedly low scores on this dimension. The science texts in grade four and six showed a higher degree of abstract style features, such as a more frequent use of passives, thus approaching an adult natural science academic prose. These features analyzed together gave a picture where the second grade science texts are noticeably involved, situated, and non-abstract, while the corresponding texts at higher levels are more informational, more elaborated and more abstract.
Biber suggests that there is a deliberate editing of the science texts in grade 2 towards a familiar oral language. He notes that (Biber, 1991:91):

This style is apparently adopted to compensate for the difficult conceptual task faced by second grader readers trying to understand expository writing and scientific subject matter for the first time.

However, another question is to what degree these involvement features really are compensating and supportive, especially in the long term. There are two points of departure in criticizing the attempts to dialogical stances in textbooks: the first has to do with some texts’ pretence to be something that they are not and the second is about register coherence.

The first line of criticism is about adding dialogic and oral features to a text that is neither a dialogue nor a spoken text. In a discussion of the lack of involvement features in adult expository genres, Biber (1991:93) somewhat frankly notes that

In other respects, though, the lack of interactive features is due to the actual communicative purposes and situations of written exposition; for example, to the fact that there is typically not a specific addressee (a particular you), and that there is very little opportunity for direct interactions between author and reader.

In a context where the addressee by necessity cannot be more specific than limited to a certain age, a direct reference with a pseudo-specific ‘you’ can almost have the opposite effect; i.e. that a reader dissociates herself from the author and from the text. An example of a similar analysis is Brown and Levinson’s (1987) politeness theory where positive politeness is described as more risky than a negative politeness since it depends on both interlocutors’ accepting a definition of having an in-group relation. If one of the interlocutors involved resists such a definition, the positive politeness fails altogether.

The results of McNamara et al. (1996) accord with this discussion. In an experimental study they showed that the degree of coherence in texts has to be adjusted to the reader’s background knowledge of the domain, to promote the comprehension of the text. Even though readers who know little about the domain of the text, benefit from coherent texts, to readers with a prior knowledge in the domain, such texts may not be challenging enough to stimulate active processing.

Textbooks with an extensive use of dialogic features may in the same way fail their purpose to high-achieving readers. One of the natural science texts in the study about a special kind of lakes, intended for 11-year-old readers, is introduced as follows:
Around the lake

If you want to swim outdoors early in the spring, you should choose a creek in a shallow lake. The water gets quickly warmed by the spring sun. The problem is to get out far enough to get your whole body under water. In addition, you will sink down with your feet in the soft bottom of lake. (Fresk, 1994:101)55

Throughout the whole text there are several direct addresses to the reader and references to everyday activities such as swimming and fishing, which the 11-year-old readers are supposed to relate to. In a discussion of this text with two high-achieving students in grade 5, Ellen56 and John, it is obvious that they dislike the way the text is written. In accordance with the results from McNamara et al. (1996) it is perhaps not a coincidence that it is the students assessed as high-achieving who react to the text in this way.

Ellen but it seems like it was meant for grade 3
(A fast den känns som den e för treor ungefär)
AE that it's meant for younger children this one
(att den e för lite mindre barn den här)
Ellen yeah
(aa)
John yeah but maybe not really. it doesn't say that it is for smaller children but the text like is oriented to smaller kids
(a fast kanske inte riktit att den de kanske inte står för mindre barn men texten liksom nästan riktar sej till mindre barn)

When asked who they think the intended reader is, they propose, even though they comprehend that it is intended for their age, that it is more in line with texts written for younger children:

John because they write like this
(eftersom dom skriver så här så)
Ellen it's not so much about facts
(de står inte särskilt mycke fakta)
John no it isn't
(nå de gör de ju inte)
Ellen it doesn't say how much the frogs eat and that stuff it would have if it had been meant for smaller
(de står liksom inte va hur mycke va groderna äter å sånt där de hade de vart om de hade vart för lite mindre så hår)

55 “Vid en slättsjö
56 All students quoted in this text have been given pseudonyms in order to protect their anonymity.
Another attempt to make texts and subject disciplines more accessible, used in the example above, is the reference to everyday experiences in textbook texts. Linking everyday experiences to science has been considered a way to bridge the depths between the student’s prior experience and the abstract discourse of science and thus to make science more relevant to the student. But what counts as everyday experiences and who has the right to decide that? Results from an ethnographic study show that ‘everyday life’ in science is something particular and that certain examples of ‘everyday life’ constituted a canon in classroom practice (Andrée, 2003). Andrée concludes that

Everyday-life references do not function as contextual support for students feeling insecure as in the examples of removing asphalt stains and making fruit syrup. It is rather the opposite. When everyday-life problems are dealt with, answers that are relevant in everyday-life are not valid in the science classroom. You do not answer that you should use washing powder to remove a stain or that you need preservatives to make fruit syrup on a science exam. (Andrée, 2003:17)

Schleppegrell (2004) draws attention to the fact that textbook texts are typically read in a situation which are neither dialogic nor interactive: “In fact, students will often read this kind of text silently or will read it aloud in teacher-directed activities where they do not have an opportunity to answer the questions and create the suggested dialogue.” (Schleppegrell, 2004:141). Even though interactional features such as questions could give an impression of creating less authoritative and more dialogic texts, this impression is superficial. Questions are posed to a reader who has no possibility of responding in real dialogue with the author. Instead, it is often the authors themselves that respond to the questions posed. This would appear to strengthen the distance between reader and author, rather than bridging the gap. In chapter 8, I will focus on the activities surrounding the texts.

The second line of criticism has to do with students’ expected transition into adult literacy. Schleppegrell (2004) suggests that by using interactional features in an otherwise academic register, incoherent texts are created. Complex nominal elements and an overall dense structure are functional for presenting a scientific content. A text where these features of an academic register are mixed with attempts to create dialogue constructs an overall structure that does not support the development of disciplinary meaning.
7.6 Conclusion

In the introduction to this chapter, I referred to Kress’ concept of difference (1989:18). From this perspective, all texts produced within an educational system are constituted around difference. Kress states that difference plays a special role in a school context since success in this context is about overcoming difference. Assertive ways of presenting knowledge where a textbook author leaves few openings for discussing and reflecting on the content do not help students to overcome differences. Neither is it helpful to attempt to create a dialogue in situations where no genuine interaction takes place.

The relationship between author and reader in textbook texts is a relationship where one party is the one that has the knowledge and the other does not, where one interlocutor naturally decides what knowledge is valid and the other is supposed to accept this knowledge in order to succeed in school. Naturally, this is a relationship where one party has authority over the other. Some of these differences are natural in the sense that it is hard to imagine a situation where they do not exist. For example, a situation where a textbook author does not know more about a subject than an intended reader seems pointless.

But the textbooks’ assertive way of presenting knowledge as something stable and without doubt can also be questioned. Knowledge in general, including knowledge presented in textbooks, is not ‘objective’ or independent of factors such as the human originators or the setting in time and place. Nevertheless, textbooks have to present knowledge in some way if they are to function as tools for learning. Coffin (2002) presents a way out of this dilemma, when it comes to the history subject, which has to do with discussing the conditions for knowledge in the classrooms:

In other words, many contemporary teacher educators and practicing history teachers recognize that the subject is a ‘distinct form of knowledge’, and one where the students have to both deconstruct and construct the values and judgments that are an integral part of its discursive practices. (Coffin, 2002:505)

In this context it is important to introduce students to the methods of research and the different outcomes of research with different methods. In this way, knowledge is presented as a result of human actions rather than as eternal truths about the world.

A less fruitful attempt to achieve less authoritative and more dialogical textbook texts is the use of dialogical features in the texts, such as questions directed to the reader or direct addresses to the reader. The conditions of the reading of textbooks texts in the classroom seldom contribute to making the dialogue authentic. The result of these dialogical attempts can instead be quite the contrary, that is, students are in fact alienated from the texts.
Questions are posed to a reader who has no possibility of responding or engaging in a real dialogue with the author. Instead, it is often the authors themselves that respond to the posed questions. This strengthens the distance between reader and author, rather than bridging the gap.

Even though the heading of the chapter refers to the relationship between reader and author, the picture that the textbooks present of this relationship is one-sided. An analysis of the texts can describe the authors’ view on their role and possibly the role which is assigned to a reader. But how a reader apprehends the situation and what role he or she chooses to take is not altogether dependent on the text. Even though a text presents knowledge in a certain way, other voices about this knowledge stemming from a classroom discussion, a teacher’s presentation of the subject (McCabe, 2004) or the student’s prior experience influence the encounter between the student and the text. In the next chapter, chapter 8, I will take a closer look at the activities and dialogues present in the classrooms.

However, authority in textbooks can be regarded as part of a larger context of authority. The authority in textbook texts is clearly not an isolated phenomenon, but part of a larger context of authority in school and an even larger context of a traditional relationship of authority between children and adults. Luke et al. (1989) question the possibility that texts in themselves only invoke authority:

And why should we suppose that the students’ belief in the authority of texts derives from the intrinsic structural features of written language or from cultural tradition, rather from the nature of school authority relations? The point is, of course, that we cannot explain text authority exclusive from school authorization… (1989:255).

They suggest instead that the authority of textbook texts should be regarded as stemming from social rules in combination with features of the text. With this broader picture as a background, in this thesis I will nonetheless mainly focus on the texts and their immediate context.
CHAPTER 8
Activities surrounding texts

The arena for the transition towards specialized discourse in school is not only texts, but also activities surrounding the texts. This chapter will be focused on these activities.

As mentioned, the factors that influence a student’s encounter with a text are many and varied. The 58 textbook texts in this study have hitherto been analyzed as independent entities, pieces of text considered out of context and without specific readers in mind. As they form part of a larger project, these texts were assembled from actual classroom activities with actual specific readers. In this chapter I will start with a discussion of reading as a situated activity and then move on to describing the activities that surrounded the texts when the students in the study read them in their classrooms. Starting from an overall picture of the text-based activities in the classrooms, I will describe three classrooms in more detail.

8.1 Reading as a situated activity

Traditionally, reading has been regarded as a neutral activity, the outcome of which is primarily dependent on the text. In this sequence from an interview with a student in grade 8, the interviewer asks if he got any instruction on how to read the text.

AG did you get any instruction on how to read the text?
(fick ni några instruktioner för hur ni skulle läsa texten?)

Martin no he just said read through the text a few pages, first I looked at the questions then I read through the text. I looked at question two "What is a 'eldhus'?" and here it's written 'eldhus' ((he shows where in the text))
(nå han sa bara läs igenom den ett par sidor först ja titta på ja gjorde ja titta på frågerna sen läste ja igenom efter sen tog ja fråga två sen läste igenom såhär fråga två vad är ett eldhus 'här står det ju eldhus (visar i boken))

Martin’s response in this interview shows an awareness of reading as a situated practice. His reading of the text is adapted to the follow-up. Since he knows that he is supposed to answer questions after having read the text, he
starts out by looking at one question at the time and then searches for the answer in the text. This kind of reading is common and necessary to master. However, it is probably not the most appropriate activity when it comes to achieving an overall understanding, a dialogical relationship with, or a critical stance towards, the text.

Within the framework of critical literacy, Luke and Freebody (1997) present a stance quite opposite to the traditional view of reading as a neutral activity. They describe literacy as culturally defined. Luke and Freebody present a vision of the teaching of literacy in school, based upon the kinds of text practices that they consider to be necessary and desirable for members of a Western contemporary society. They maintain that if one accepts a view of reading and writing as variable social practices, then the teaching of literacy in school becomes a question of the kinds of social s that the school should offer; the problem is no longer to find a single best way of teaching reading and writing.

### 8.1.1 Reading as a dialogical activity

One answer to what s should be encouraged in classrooms lies in the concept of dialogue. Mercer et al. (2004:375) highlights dialogue as a key to meaningful teaching:

> However, across the curriculum subjects there is considerable variation in terms of official policy, teacher guidance and classroom practice in the extent to which it is recognized that the quality of teaching and learning is dependent on the quality of classroom dialogues.

Thus, the classroom discourses that surround texts can be described in terms of their dialogicality. With a reference to Bakhtin, Nystrand et al. (2003) describes classroom dialogue as ranging from “…tightly controlled recitation (in which students demonstrate their recall of assigned information) to open discussion featuring an unprescribed exchange of student ideas in the absence of test questions.” (Nystrand et al., 2003:139). Further, Nystrand et al. discuss the Bakhtinian use of monologic *official discourse* versus dialogic discourse. The official discourse is the most radical form of monologic discourse which, according to Bakhtin (1984), pretends to possess a ready-made truth. This official discourse goes hand in hand with the concept of recitation described by Nystrand et al. The recitation described takes place in a school context and consists of a one-way communication that aims at eliciting official answers from texts. In this form of communication, the teacher gets the role of evaluator and the students are restricted to the role of novice. Nystrand et al. states that:
This relation forms the basis of a discourse environment in which students have little chance of becoming conversants of consequence, recognized as contributing, producing, or participating actively in the construction of knowledge. (Nystrand et al., 2003:140)

The opposite of a situation described above is an open discussion where students are treated as dialogical resources with prior knowledge and opinions. In such a situation, the relationship between evaluator–novice nuanced and ultimately changed. The table below gives an overall picture of the differences between monologically organized and dialogically organized instruction.

Table 30. Nystrand’s (1997:19) Key Features of Monologically and Dialogically Organized Instruction

<table>
<thead>
<tr>
<th></th>
<th>Monologically Organized Instruction</th>
<th>Dialogically Organized Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paradigm</td>
<td>Recitation</td>
<td>Discussion</td>
</tr>
<tr>
<td>Communication model</td>
<td>Transmission of knowledge</td>
<td>Transformations of understandings</td>
</tr>
<tr>
<td>Epistemology</td>
<td>Objectivism: Knowledge is a given</td>
<td>Knowledge emerges from interaction of voices</td>
</tr>
<tr>
<td>Source of valued knowledge</td>
<td>Teacher, textbook authorities: Excludes students</td>
<td>Includes students’ dialogism: interpretations and personal experience</td>
</tr>
<tr>
<td>Texture</td>
<td>Choppy</td>
<td>Coherent</td>
</tr>
</tbody>
</table>

Dialogical classrooms promote learning in a number of ways (Nystrand, 1997; Nystrand et al. 2003); by defining students as sources of knowledge, by stimulating modes of cognition as thinking, not only recalling, and by allowing other voices than that of an authoritative teacher.

But monological and dialogical classroom discourses do not necessarily exclude each other. They merely serve different purposes. Nystrand et al. suggest that “whereas monologic discourse is useful for establishing topics and conveying information, it is dialogic discourse that opens the floor to discussion and the negotiating of ideas and new understandings.” (Nystrand et al., 2003:141)

The important question is instead in what proportions monological and dialogical discourses are used. Recent research by Nystrand and Gamoran (summarized in Nystrand et al. 2003) showed that an overwhelming majority of questions in eighth and ninth grade English classrooms are asked by a teacher in recitation. The main function of these questions was to display and report already known information, not to produce new ideas and new knowledge.

As mentioned in chapter 7, research on modality in textbooks shows that textbooks, compared to other types of texts, present knowledge in an assertive way with few openings to alternative perspectives. Without dialogical
practices these texts become even more dominant as voices in a classroom. With this kind of authoritative texts it is increasingly important that students are supported in discussing the texts as texts, written by an author with a specific purpose, not as neutral transmitters of knowledge.

8.2 Things done with textbook texts in classrooms

The text-based activities can be defined in terms of dialogicality. In describing the classrooms that we have visited, I will start out from a traditional practice of text-reading activities, common in many of the classrooms. This routine includes:

1. an introduction of the content area
2. an instruction on how to read the text
3. the reading of the text
4. a follow-up

Since the descriptions of the classrooms are focused on activities including the textbook texts in question, steps 1 and 4, the introduction and the follow-up, are interpreted as such when they are closely linked to the text. From a wider perspective and in the longer run, hardly any text in school completely lacks introduction or follow-up. Nevertheless, the steps in the routine described above are interpreted as such when they have a strong or explicit relation to the text in question. In the project, and from now on, I will focus on the steps 1, 2 and 4. The actual reading situation is naturally important but not focused on in the data collection of the project.

As described in chapter 3, the activities surrounding the texts are described partly through observations in the classroom, partly through interviews with students and teachers. As mentioned, the overall aim of the project is to describe the encounter between the text, the activity and the reader, and thereby portray the text cultures in which the reading and writing takes place in the different subject areas. The classroom activities as such are not focused in this study and naturally can not be compared to studies where they are the main object of description. The sampling methods are also sketchy in comparison to studies where the classroom activities are focused on and observed during longer periods of time (e.g. Dyson 1993; Brice Heath; Smidt, 1997). In our study the relevant classroom activities, i.e. the activities including at least one reading and writing assignment in every class, were observed by one of the collaborators in the classroom, and notes

57 af Geijerstam’s thesis (forthcoming) describes the macrogenres of student writing within the area of natural science.
were taken during the activity. All interviews with the children, and most interviews with the teachers, were audio-recorded and transcribed.

However, the three steps of text reading activities, 1, 2 and 4, can be qualitatively very different. With the concept of dialogicality in focus, I will add an analysis of the dialogicality of the activities. The following classrooms can be seen as extremes on a continuum between monological and dialogical. Related to the continuum ranging from monological to dialogical is the difference between reproducing and producing text activities. The reproducing text activities require a repetition of earlier known and presented facts. In producing text activities, students need to interpret knowledge independently and create new knowledge.

In a monologically organized classroom, the introduction is in large part initiated and controlled by a teacher in the form of a lecture. If questions to the students occur, they are of a recitation type and have a correct answer that the teacher already knows. The function of the dialogue between teacher and students is to test the students’ recall of earlier school-based information. The reading instruction in a monological classroom is sparse and the reading is an activity that the students do on their own, such as a short instruction to read the text as homework with no further details on how to read the text. The instruction is in this sense not oriented towards a dialogical reading of the text. The third text-oriented activity is then the follow-up. In a monological classroom the follow-up traditionally includes an examination of the text content, in Nystrand’s (2003:139) terms recitation “in which the students demonstrate their recall of assigned information”. This could also be characterized as a reproducing text activity, where the outcome of the students’ encounter with the text is to display a recollection of certain information. Reproducing reading activities are activities where the text is seen as stable and constant. In these activities the text is used to answer questions about details and to retell a text on a superficial content level.

In a more dialogically organized classroom an introduction to the content area could be based on the students’ prior knowledge and interests in the area achieved through an open discussion around related issues. Questions that occur in the classroom are open-ended and genuine, i.e. the teacher does not necessarily have a correct answer. For example, an instruction on how to approach the text could include references to the author as such and to the way in which the student is addressed in the text. The instruction towards a dialogically oriented reading encourages the student to go into dialogue with the text, which is to relate the text to own experiences, opinions and thoughts. A possible dialogical follow-up could consist of a comparison between different texts or different readings of one text. The follow-up is a producing text activity in the sense that new knowledge is produced. The producing reading activities are based on a view of the students as active. For example, these activities consist of open-minded discussions of the meaning of a text, of activities where the text is related to personal experi-
ence and to other texts, and of analysis of the text in terms of its function, possible readers and possible authors. The analysis of the dialogicality in these text activities is based on an interpretative synthesis of the information from the classroom observations and the interviews with students and teachers.

The classrooms in the study will be described with the subject area as a starting-point. The descriptions of the activities focus on the ones that involve the texts analyzed in the study, which are the texts that are read by all students in a class. This choice of focus has the consequence that it is only the joint reading activities in the classroom that are described. Naturally, individually chosen reading also occurs, especially when it comes to narrative texts where students in lower grades often have an ongoing reading assignment of a narrative text which they have chosen themselves.

8.2.1 Activities surrounding Swedish literary texts

A compilation of the activities surrounding the Swedish literary texts is described in table 31. However, not all classrooms included activities where the students read a text in all three subject areas at the time of our visit. In these cases the researchers introduced texts themselves. These activities are not described in the table below.

The analysis of the dialogicality or monologicality in the classroom is a generalization, often from a number of activities. Examples of dialogical and monological and reproducing and producing instances are given after the table.

Table 31. Activities surrounding Swedish literary texts

<table>
<thead>
<tr>
<th>Grade, classroom</th>
<th>Introduction</th>
<th>Instruction (oriented towards a reading that is)</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 5, 1</td>
<td>dialogical</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 5, 2</td>
<td>monological</td>
<td>monological</td>
<td>-</td>
</tr>
<tr>
<td>Grade 8, 1</td>
<td>dialogical</td>
<td>dialogical</td>
<td>producing</td>
</tr>
<tr>
<td>Grade 8, 2</td>
<td>monological</td>
<td>monological</td>
<td>-</td>
</tr>
<tr>
<td>Grade 8, 3</td>
<td>dialogical</td>
<td>monological</td>
<td>producing</td>
</tr>
<tr>
<td>Grade 8, 4</td>
<td>-</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 8, 5</td>
<td>monological</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 8, 6</td>
<td>monological</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 8, 7</td>
<td>-</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 8, 8</td>
<td>dialogical</td>
<td>dialogical</td>
<td>producing</td>
</tr>
<tr>
<td>Grade 11, 1</td>
<td>dialogical</td>
<td>monological</td>
<td>producing</td>
</tr>
<tr>
<td>Grade 11, 2</td>
<td>dialogical</td>
<td>dialogical</td>
<td>producing</td>
</tr>
<tr>
<td>Grade 11, 3</td>
<td>dialogical</td>
<td>monological</td>
<td>producing</td>
</tr>
<tr>
<td>Grade 11, 4</td>
<td>monological</td>
<td>monological</td>
<td>producing</td>
</tr>
<tr>
<td>Grade 11, 5</td>
<td>dialogical</td>
<td>dialogical</td>
<td>producing</td>
</tr>
</tbody>
</table>
Example of monological introductions:
Teacher-initiated questions about vocabulary in the text followed by students’ answers and the teacher’s evaluation (IRE sequences)

Example of dialogical introductions:
Open-ended discussion about friendship in smaller groups and in a larger group before reading a text about same issue

Example of monological instructions:
Sparse instructions to read the text as a home-work in order to answer the textbook’s content questions

Example of dialogical instructions:
Explicit instructions on how to read the text are given. The students are instructed to write down associations and important passages in a reader’s logbook.

Example of reproducing follow-ups:
A test on the content of the text and special vocabulary used in the text

Example of producing follow-ups:
The instruction to write a short story of one’s own in the same genre as the text that the students have read and discussed together in the classroom.

The activities that involve the narrative texts are mixed between monological and dialogical introductions and instructions, and between producing and reproducing follow-up activities. It is therefore difficult to identify a specific pattern of text activities over all the three grade levels under study. In contrast to the content area texts, the reading of narrative texts in grade 5 is still sometimes a joint activity, something that the whole class does together and at the same time. The plot is in focus, not the details. Some of the activities involving narrative texts in grade 5 and grade 8 classrooms aim largely at the creation of an overall understanding of the plot in the text. The activities used for this purpose are predominantly reproducing, such as retelling parts of the text or explaining potentially unfamiliar words in order to understand the content of the text. Very few activities involved generalizing statements about the text or discussions of the text’s message. An interesting tendency is that the text-based activities in grade 11 are to a greater extent dialogical in their introductions and instructions. All the follow-ups in grade 11 are also producing.

Most children at grade five (age 10 to 11) have been familiar with reading narratives since early childhood. Anward (1983) describes this as one of the first genres that children learn.
8.2.2 Activities surrounding social science texts

The texts read in social science are from several different classes within social science such as geography, history, social studies, religion.

Table 32. Activities surrounding social science texts

<table>
<thead>
<tr>
<th>Grade, classroom</th>
<th>Introduction</th>
<th>Instruction (oriented towards a reading that is)</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 5, 1</td>
<td>monological</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 5, 2</td>
<td>monological</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 5, 3</td>
<td>dialogical</td>
<td>monological</td>
<td>-</td>
</tr>
<tr>
<td>Grade 5, 4</td>
<td>monological</td>
<td>monological</td>
<td>-</td>
</tr>
<tr>
<td>Grade 5, 5</td>
<td>dialogical</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 5, 6</td>
<td>monological</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 8, 1</td>
<td>dialogical</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 8, 2</td>
<td>monological</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 8, 3</td>
<td>monological</td>
<td>monological</td>
<td>producing</td>
</tr>
<tr>
<td>Grade 8, 4</td>
<td>dialogical</td>
<td>monological</td>
<td>-</td>
</tr>
<tr>
<td>Grade 8, 5</td>
<td>monological</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 8, 6</td>
<td>dialogical</td>
<td>monological</td>
<td>producing</td>
</tr>
<tr>
<td>Grade 8, 7</td>
<td>dialogical</td>
<td>monological</td>
<td>producing</td>
</tr>
<tr>
<td>Grade 8, 8</td>
<td>monological</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 8, 9</td>
<td>-</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 11, 1</td>
<td>monological</td>
<td>monological</td>
<td>producing</td>
</tr>
<tr>
<td>Grade 11, 2</td>
<td>dialogical</td>
<td>monological</td>
<td>producing</td>
</tr>
<tr>
<td>Grade 11, 3</td>
<td>monological</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 11, 4</td>
<td>monological</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 11, 5</td>
<td>monological</td>
<td>monological</td>
<td>reproducing</td>
</tr>
</tbody>
</table>

Example of monological introductions:
The teacher gives an introduction to political structures; the students are encouraged to pose questions if they do not understand.

Example of dialogical introductions:
The teacher asks for the students’ associations concerning religions and Judaism in the classroom. The students’ associations are discussed and written on the blackboard.

Example of monological instructions:
Brief instruction to read the text

Example of dialogical instructions:
-

Example of reproducing follow-ups:
Answer textbook questions individually in writing about mainly text content. The questions typically occur at the end of one section in the textbook and
are for example: *What does the word democracy mean?*, *How many years is it between elections in Sweden?*

*Examples of producing follow-ups:*
A joint discussion of what it means to be a Catholic in Sweden today in terms of everyday choices.

The most common pattern of text activities in social science includes a monological introduction, an instruction which is oriented towards a monological reading of the text and a reproductive follow-up. In all but one classroom, the reading of the text was preceded by some kind of introduction. As mentioned, a majority of these introductions were monological and typically carried out as a lecture with ‘closed’ questions aiming at recall information from previous schooling, i.e. *What are the countries of the West Indies?* or *Why did people go on voyages of discovery?*. The instructions on how to read the text were in all classrooms but one oriented towards a monological reading of the text. Closely connected to the reading was in many classrooms the expectation that the students were to write something. The dominant practice, in all three grade levels, was to answer in writing questions about the text content taken from the text book or from a connected workbook.

All together, many of the activities involving discursive texts in the classrooms of the study aim at retrieving information from the texts read and at the subsequent reproduction of this information by the students. A large part of the activities in the classroom is directed towards recitation, towards checking the students’ recall of the text.

### 8.2.3 Activities surrounding natural science texts

The texts here described as natural science come from several different areas within natural sciences such as chemistry, physics and biology. As mentioned, they are here treated within the broader area of natural science.

<table>
<thead>
<tr>
<th>Grade, classroom</th>
<th>Introduction</th>
<th>Instruction (oriented towards a reading that is)</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 5, 1</td>
<td>monological</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 5, 2</td>
<td>-</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 5, 3</td>
<td>monological</td>
<td>monological</td>
<td>producing</td>
</tr>
<tr>
<td>Grade 5, 4</td>
<td>dialogical</td>
<td>dialogical</td>
<td>-</td>
</tr>
<tr>
<td>Grade 5, 5</td>
<td>dialogical</td>
<td>dialogical</td>
<td>-</td>
</tr>
<tr>
<td>Grade 5, 6</td>
<td>monological</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 8, 1</td>
<td>-</td>
<td>monological</td>
<td>reproducing</td>
</tr>
<tr>
<td>Grade 8, 2</td>
<td>monological</td>
<td>monological</td>
<td>reproducing</td>
</tr>
</tbody>
</table>
Example of monological introductions:
The students take turns reading the text aloud in the classroom. The teacher pauses from time to time to encourage students to ask if they do not understand.

Example of dialogical introductions:
The teacher illustrates the subject area with an experiment. There is an open discussion in the classroom of possible outcomes of the experiment.

Example of monological instructions:
The teacher writes an instruction on the blackboard to read the pages x-y.

Example of dialogical instructions:
The students are instructed to choose and read several different texts within the same minor subject area to get a picture of the subject area in general. They are encouraged to formulate questions that they can ask when visiting the local center for wastewater management.

Example of reproducing follow-ups:
Test on a specified part of the textbook.

Example of producing follow-ups:
Formulate questions that the students can ask when visiting the local centre for wastewater management.

The activities surrounding the reading of natural science texts are similar to the social science activities, with partly monological, partly dialogical introductions to the texts and predominantly monological instruction on how to read the texts. The follow-ups are to a greater extent reproducing than the follow-ups in social science. The most common pattern of text activities includes however, as with the social science texts, a monologic introduction, an instruction which is oriented towards a monological reading of the text and a reproducing follow-up.
8.3 Examples of text activities in three different subject areas and three different grade levels

In order to exemplify the typical patterns of activities described in the previous section, in this section I will describe the reading activities in three different classrooms in more detail. Since the activities in the subject areas are relatively stable across grade levels, I have exemplified these activities with classrooms from different grade levels. The classes described are a Swedish literary class in grade 11, a physics class in grade 8 and a history class in grade 5. The classrooms have been chosen as representative of typical settings within their subject area.

8.3.1 Reading a literary text in grade 11

The typical pattern of text activities involving literary texts in grade 11 included a dialogical introduction, an instruction which was oriented towards a monological reading of the text and a producing follow-up. In this particular classroom the teacher started by handing out a compilation of extracts (5-7 pages) of five modern Swedish novels to the students. A common theme to all texts was alienation. The instructions written on the hand-out were:

1. Read through all the extracts
2. Hand in a piece of paper with your name and which novel you would prefer to read as your first, second and third choice.

When the students had finished the novels of their choice, they had one class together to prepare for a presentation. The instructions were to work in groups together with other students that had read the same text and choose a central theme in the text and present it to the rest of the students. The presentations were supposed to lead to a question that could function as an opening to a discussion.

The class for the presentations started with a question from the teacher on how an audience should behave. After establishing an ideal audience as ‘quiet, listening and positive’ the presentations started.

The presentations differed from each other. Some groups chose to dramatize scenes from the novel; other groups read parts of the text aloud and reflected on it. All groups ended their presentations with open questions to the rest of the students. The questions were for example: *How much should an immigrant have to adjust to the norms of a new country?*, *How would you react if a friend told you that he/she was gay?*, *Is it more difficult for two women to come out as gay?* The students engaged enthusiastically in the discussions of these questions. During the discussion, the teacher took a more passive part.
The introduction to this assignment was dialogical in the sense that students had the opportunity to compare different texts and choose the text that appealed most to them. The instruction on how to read the text was not especially oriented towards a dialogical reading of the text but the follow-up as a whole aimed at going into dialogue with the texts. The presentations of the texts also created an open discussion in the classroom, where the students were active in comparing their understandings and creating new perspectives on a joint overall theme of alienation.

Sara and Lisa have read the same text about an immigrant family’s first period in Sweden. It is a literary text based on a true story, and it is written by an immigrant woman in collaboration with a Swedish author.

AE  you read this text in the theme of alienation, how do you think it’s connected?  
(Si läste ju den här på de här temat med utanförskap hur tycker ni att den hänger samman med de?)

Sara  I think it’s really connected, it’s like they’re not welcome in a country, they are dying in their own country and they’re not welcomed here, it’s crazy  
(mm de hänger verkligen samman tycker jag de e ju så här att dom e inte välkomma i ett land att dom dom dör i sitt eget land å dom e inte välkomna hit de e ju helt knäppt)

Lisa  or that they stay here for years before they get a residence permit, they’re not allowed to start a new life in Sweden  
(eller att dom lever här dom e ju flera år här innan dom får deras uppehållstillsättningsgrej, dom liksom blir inte tillåtna att bygga upp ett ordentligt liv i Sverige)

Both Sara and Lisa enter into a dialogue with the texts, react to it and relate the novel to the overall theme of alienation. Sara underlines an immigrant’s double sense of alienation, from the new country and from the old one. Both of them also related the text to their earlier understanding of immigrants’ situation in a new country and discuss how their views on the subject have been altered by their reading of the novel.

AE  is the text oriented towards a special audience?  
(är texten riktad till en speciell publik?)

Sara  I suppose it’s mostly young people but grown-ups could read it too, I think everyone with prejudice about immigrants who think there’s getting to be too many of them should read it  
(de e väl mest ungdurar men äldre skulle också kunna läsa den ja tycker att såna som har fördomar mot flyktingar som tycker att de blir för mycket dom borde läsa den)

Lisa  yeah cause you get another impression  
(a för man få ett helt annat intryck)

Sara  you feel empathy  
(man får känna lite empati för dom)

AE  so you think it fulfills a pedagogical purpose too?  
(så ni tycker att de har ett visst pedagogiskt syfte också?)
In this specific activity the expected outcome of the students’ reading was
the discussions in themselves, initiated by the presentations of different novels. This structure, chosen by the teacher, can be regarded as an indication that a discussion with different voices is a valid and important way of acquiring new knowledge. In this case, the typically dialogical pattern of s involving literary texts (especially in grade 11), has succeeded in making Lisa and Sara transform earlier understandings of the subject and, in dialogue with the text and each other, create new knowledge.

8.3.2 Reading a physics text in grade 8

The reading of a physics text in grade 8 is an example of the most common pattern of text activities in natural science with a monological introduction, an instruction that is oriented towards a monological reading of the text and a reproducing follow-up activity. In this particular physics class in grade 8, the text in focus is about electricity and magnetism. Compared to other natural science texts in grade 8, the text has a relatively high degree of abstract referents (46% in comparison with an average of 30%). The technicality in the text is relatively normal, compared with other texts.

The activity surrounding this rather abstract and technical text is minimally elaborated. In the beginning of the period, the students are instructed to read the pages 52-58 without further ado. When the students have started to read, further instructions are written on the blackboard:

1. Read pages 52-58
2. Take the quiz on p. 58
4. Around 8.50, short run-through of important concepts
The students seem to follow this instruction, and most of them are concentrated on their reading. The teacher is available to answer questions. At the end of the period, she goes through some of the central concepts again and asks questions such as: “Do you know what resistance means?” She writes on the blackboard the units of resistance, voltage and current.

| Resistance | ohm | Ω |
| Voltage    | volt | V |
| Current    | ampere | A |

The teacher then moves on to different ways of connecting batteries to bulbs and asks the students if they know different ways to do it. One student answers and draws a picture of one kind of connection on the blackboard. The teacher repeats questions from the quiz to the whole group of students and the students respond.

All in all, there is no introduction to the text at all. The instructions on how to read the text are oriented to a monological reading of the text. The follow-up includes both the students’ individual responding to textbook questions in writing and the teacher’s review of some of the questions at the end of the class. Six low-achieving students were interviewed from this classroom. In these interviews, all of them showed a low degree of text movability.

Robert and Anette have trouble distinguishing the main points in the text even though this was central in the text activities in the classroom.

AE  can you sum up the first part of the text, what is most important? (kan du sammanfatta den första delen av texten, vad är det viktigaste?)
Robert  ((no response)) (6s pause)
AE  it is about electricity so to speak, is there something special about electricity? (de handlar om elektricitet kan man väl säga, ere nått speciellt mer elektriciteten?)
Robert  no, I can’t think of anything (näe, ja kommer inte på nått)
AE  how about you? (to Anette)) (va säger du?)
Anette  ((no response))
AE  was anything especially important in this text? (ere nåra saker som va speciellt viktiga här)
Anette  (4s pause) maybe what unit resistance is measured in (4 s pause) kanske va resistans mätts i)

When asked about the function of the text, their responses are oriented towards a monological understanding of the text as a source of information:

AE  why do you think you read this? (varför tror ni att ni ska läsa den här?)
Throughout the interview it is evident that Robert and Anette do not enter into a dialogue with the text. When Robert remarks that he thinks the text is boring and is asked why, he answers that it is not important.

The activities surrounding the text do not succeed in constructing the text as interesting or important to the students. Reproducing activities construct texts as sources of information. Very little in this way of reading texts encourages a view of texts as something that you could interpret in different ways. There is no awareness, for instance, that a text could be arguing for a purpose or written to invoke certain feelings. Students are in this sense not encouraged to enter into a dialogue with the text.

8.3.3 Reading a history text in grade 5

As mentioned, the most common pattern of text activities in social science includes a monological introduction, an instruction which is oriented towards a monological reading of the text and a reproducing follow-up. The reading of a history text in grade 5 follows this pattern.

The history text read in the classroom described in this section is a relatively dense text about the history of Soviet Union and Russia used in grade 5. Different perspectives are juxtaposed in a text whose nouns are technical and generalized compared to other texts collected within this project. Adding to the difficulty of the text is the fact that some of the reference chains are not kept together well. In the history class the following activities involving texts were carried out:

- Looking at a map of Russia
- Answering closed questions from the teacher about geography (for instance What is characteristic of a tundra?)
• Taking turns reading the text aloud, when not reading aloud the students follow the text in the book
• Reading part of the text by themselves
• Answering, in writing, questions from a workbook about the text

No explicit instructions were given on how to read the text. The reading of a text and the written answers to questions was a customary way of treating discursive texts in this classroom.

The class has been reading the text together as described above: before being interviewed about the text, Anna and Peter were asked to reread the text individually.

Even though Peter says that he finds the text quite easy to read, his recount of the sequence of events is inconsistent with the text.

AE why how come there was a revolution why was there a revolution in Russia?
(varför hur kom de sej att de blev revolution da varför blev de revolution i Ryssland?)

Peter one can’t keep going on like that all the time
(man kan ju inte hålla på så där hela tiden)

Anna no
(nå)

Peter people are starving of course if it should happen here when I was here I would revolt
(folk får svälta de e ju klart om de skulle va här när ja va då skulle ja göra uppror)

AE ((laughs))
((skrattar))

Peter you can tell at once
(de ser man på en gång ju)

AE yeah but
(a men)

Peter but it’s kind of difficult here since it’s so huge
(men här e de lite svårt eftersom de e så stort)

AE yes but I mean this revolution 1917 why did the people start a revolution then
(ja men ja menar den här revolutionen som va 1917 varför gjorde man revolution då)

Peter you couldn’t have it like that in the country anymore
(man kunde inte ha landet så här längre)

AE no how do you mean
(nå hur då menar du)

Peter like Stalin for instance he sent innocent people into battle
(liksom Stalin till exempel han skicka ju oskyldiga i strid)

AE yes but but
(ja fast fast)

Peter carrying on like that for all these years, you wouldn’t have any people left in the end
(hålla på så där i alla år då skulle man ju inte ha några folk kvar sen)
He picks out details from the text, but he does not create an overall picture of the events in the text. When asked about why there was a revolution in Russia 1917, he has the impression that the revolution was a reaction to the rule of Stalin. What is interesting in the sequence above is that he does have an opinion about the events, probably based on a general attitude towards Soviet communism in Western countries, and that he is supported in this misunderstanding of the sequence of events by his classmate Anna. In a way this can be seen as entering into a dialogue with the text. He makes an effort to construct a meaning of the text that is relevant to him, but this is a meaning making which only takes into account isolated parts of the text, while ignoring other parts.

Peter is very open to involving associations to own experiences, but these associations do not always help him to interpret the text.

Peter

since so many things have been happening in the Soviet Union they’re very poor there, there are not so many, there are some nice things there but this yoghurt Kefir there’s a brand on these (eftersom de har hänt så mycket i Sovjetunionen de e ju fattigt där å, så finns de inte de finns några fina saker där men så filmjölken Kefir de hänger ju ett märke på de här)

AE

m

(m)

Peter

the church or whatever it’s supposed to be (kyrkan eller va de ska föreställa)

For instance, he begins talking about things he associates with Russia in a way that is typical for him when interviewed. You could say that he thinks aloud, forming associations that have to do with Russia. My interpretation of these associations could be: a lot of things have happened in Russia—the country is very poor—so there are no nice things there—on the other hand there is a picture of a Russian church on a Swedish yoghurt brand that is nice. The classroom activities do not encourage him in making these associations in a way which is supportive to his reading of the text.

Peter can often build meaning in texts but it is more grounded in his expectations of the text than in any actual interaction with the text. An example of this is his reading of the history of Russia where he has the impression that communism in Russia was a bad thing and when asked why there was a revolution, he presents Stalin’s rule as the cause. He does not move very easily through the actual text. In one sense he enters into a dialogue with the text. But these opinions are not genuinely dialogical with the text since they are built on counterfactual readings of the text. He expresses already formed opinions rather than any new perspective on the world building on an encounter with the text. He is quite eager to associate things with the texts but these associations do not appear to help him interpret the text. To Peter this particular text is problematic, and he seems to have trouble entering into a dialogue with the text in a meaningful way.
As described in chapter 3, the factors influencing the encounter between text and reader are numerous. Even though the activities surrounding the texts are of utmost importance, the relationship between activity and reading is not static in the sense that a certain activity always results in certain reading of the text. The third part of the triangle described in section 3.2, is the reader and her prior experience and knowledge, needs, motives and interests. To other students, the same text about Russia and the same text activities in the classroom can result in a different encounter with the text. John and Ellen are both competent readers and have no trouble recounting the text accurately.

John's retelling of the Russian history is consistent with the text. Moreover, he retells it backwards, in relation to the historical chronology as well as in relation to the text, which demonstrates his full awareness of the causality in the sequence of events.

An even more direct form of going into dialogue with the text is exemplified by Ellen who discusses the motives behind the actions of the political leaders.

John well it's from Soviet the history of the Soviet Union it was how people got into prison and couldn't say what they wanted about communistic dictatorship, yeah people died from inhuman work and the cold in Siberia and well when the communists came into power with only one quarter of the votes, after Russia was dissolved when they had overthrown the tsar, yes they prohibited all other political parties.

John's retelling of the Russian history is consistent with the text. Moreover, he retells it backwards, in relation to the historical chronology as well as in relation to the text, which demonstrates his full awareness of the causality in the sequence of events.

An even more direct form of going into dialogue with the text is exemplified by Ellen who discusses the motives behind the actions of the political leaders.

Ellen well about Stalin and Lenin perhaps I would've learned more about what they did and ...why they were so cruel and why they were so suspicious and why they killed so many like what were the reasons there must have been there can't be only one reason for him being so suspicious he can't have executed several people I don't know just because of one thing it might have been more...

AE can you tell me what happens in the beginning John (kan du berätta vad som händer i början här John)
This example shows a deeper understanding of the text where she has a dialogical approach, not only to the direct text content, but also towards the feelings and motives of the participants in the historical setting described. She is also able to express a wish for further explanation in the text, that is, she has an ability to visualize how to text could be different.

The examples of different students’ reading, Peter, vs. John and Ellen, of the same text after participating in the same classroom activities demonstrates clearly that the encounter between text and reader is dependent on many factors. However, it does not seem like Peter is helped in his reading and meaning-making by the text activities in the classroom. When asked to retell the story he bases his recount on isolated details rather than a consistent understanding of the historical events. In spite of this lack of gist recall he is quick to respond to questions about the text. This could indicate a familiarity with a practice of answering questions with details rather than trying to create a larger understanding of the whole text. The follow-up activity in this classroom, answering closed questions in the workbook individually, does not promote his meaning-making and learning from this text.

8.4 Summary and conclusion

When comparing the classroom s in the three subject areas and in the three grade levels, several patterns can be identified.

Within the reading activities which include literary texts the dialogical activities seem to increase in later grade levels. That is, the activities in grade 11 have mostly dialogical introductions, half of the instructions are oriented towards a dialogical reading of the texts and the follow-ups are producing. The reading of literary texts is the kind of reading that is considered to be ‘the easiest’, by students as well as by teachers. A recitation of texts is from this point of view not necessary to establish and control an understanding of the text content. The subject area as such is not oriented towards a compilation of facts but rather towards an aesthetic experience and understanding.

The activities surrounding the reading of texts in social science and natural science show a stable pattern of a monological approach to texts. Principally, the texts are used as sources of information. Comparing the three steps of introduction, instruction and follow-up of the reading of the text, it is notable that the introduction often has more of a dialogical potential than the instruction and follow-up. It is as if the teachers’ dialogical ambitions only
reach the introduction of the texts, not the actual instruction on how to read the text or the follow-up. The method of assessment is of utmost importance to the way the students study. In pedagogical contexts the influence of testing on teaching and learning is discussed as the washback effect, (e.g. Cheng, 1997:39). Since the follow-up of the texts often has the function of assessment, it is very important for how the students read the text. Dominantly monological follow-ups are then a strong incitement for the students to read the texts in monological ways.

The follow-ups typically have the purpose of controlling the students’ recall of text content. The point of reading these kinds of texts is for the students to be able to elicit what, in a school context, is called ‘facts’ about something, for example Russia in the example in section 7.4.2. The texts are often read individually by the students and after the reading the students are supposed to answer closed questions like for example: *What country in Europe is closest to Ukraine when it comes to population? With which country does Russia share the longest border?* (Nordling et al., 1996:167). A common student response to this kind of follow-up is a fact-fishing way of reading (Edling, 2002). An illustration of a fact-fishing way of reading is Martin’s description of how he reads social science texts in the example at the beginning of this chapter:

Martin

> no he just said read through the text a few pages, first I looked at the questions then I read through the text. I looked at question two “What is a blackhouse?” and here it says ‘blackhouse’ (he shows where in the text)) (nå han sa bara läs igenom den ett par sidor först ja titta på ja gjorde ja titta på frågerna sen läste ja igenom efter sen tog ja fråga två sen läste igenom såhär fråga två ’vad är ett eldhus’här står det ju eldhus (visar i boken))

Through these activities of reading discursive texts the students focus on details in the text rather than on an overall understanding of a phenomenon. With this practice, the texts become solely a matrix which is used for retrieving information. Very little in this way of reading texts encourages a view on texts as something which can be interpreted in different ways.

It is certainly important for students to master reproducing reading activities. Understanding and retrieving information from a text are fundamental and necessary reading skills. Describing texts and text s as either reproducing or producing is a generalization, however. Most texts and text activities include both reproducing and producing parts and I cannot see how they can be anything else. Knowledge is construed in contexts of earlier knowledge.

But in many of the classrooms described in this study, a large part of the reading activities focuses only on the reproduction of texts. Great importance is attached to the memorizing and recapitulation of details in content area texts and to reproduction of the plot of narrative texts. In social science, almost half of the activities (9 out of 20) had a follow-up that consisted of
questions in a textbook to be answered individually. Almost one fourth of
the activities in natural science (4 out of 20) had the same kind of follow-up.
This means that the teacher hands over to the textbook author the responsi-
bility for instructing the students on how to read the text.

By doing different things with texts, we construct what it is to read texts.
In schools, more specifically, students learn what it means to read a narrative
text or a discursive text by participating in s involving texts. Langer de-
scribes it as “students learn what a community values” (Langer, 1995:56). In
society as well as in school the written language plays a special role as an
intellectual tool. A fundamental part of socialization in school aims at learn-
ing how to handle the written language in different forms. The Swedish Cur-
riculum Statement for the compulsory school system, the pre-school class
and the leisure-time centre, describes the aims of learning to read and write
in school in the following way:

Pupils should be able to keep their bearings in a complex reality where there
is a vast flow of information and where the rate of change is rapid. This is
why methods of acquiring and using new knowledge and skills are important.
It is also necessary for pupils to develop their ability to critically examine
facts and relationships and appreciate the consequences of the various alter-
natives facing them. Language, learning, and the development of a personal
identity are all closely related. By providing a wealth of opportunities for dis-
cussion, reading and writing, all pupils should be able to develop their ability
to communicate and thus enhance confidence in their own language abilities.
(Curriculum for the Compulsory School System, the Pre-school Class and the
Leisure-time Centre, Lpo 94, p. 7)

The curriculum statement mentions a critical approach as an important abil-
ity for the pupils to develop. In a broader sense, this could be seen as the
way of handling texts that this particular community values. This is also
consistent with Kress’s ideal resistant reader, for example (Kress, 1989).

But the statement that “students learn what a community values” could
also be interpreted in a more local way, i.e. that students learn to do things
according to the practices that surround them. The activities involving texts
in the classroom then come to be of outmost importance for how the students
master different reading practices and subject areas. The reproducing reading
that the students engage in is hardly surprising or blameworthy in activities
where the reproducing reading is the dominant form (Anward, 2005). Stu-
dents and teachers jointly define the text activities as reproducing. Any
moral indignation at students’ reproducing texts is then irrelevant since the
reproducing text activities are judged from the perspective of non-
reproducing activities. Another issue is whether reproducing text activities
are preferable as such, or even consistent with the aims of the curriculum.
CHAPTER 9
The text, the activity and the reader

Even though the patterns of abstraction are realized in different ways in humanities and science, there is an overall development towards adult specialized discourse. Veel (1997) suggests that:

In school science, as in other disciplines, changing configurations of grammatical features lead students away from the kinds of meanings which are linked to the here-and-now towards the abstract, technical and ‘trancendental’ kinds of meaning we expect of adult, educated discourse. Like a child learning its mother tongue, the language of school science attempts to move students seamlessly into ‘adult’ forms of scientific meaning-making. (Veel, 1997:188)

But how ‘seamless’ is the transition from children’s specific and everyday language to specialized abstract discourses? Even though there are differences in abstraction in texts from different subject areas, there is a general tendency of increasing abstraction. In accordance with Veel’s description of a development of texts towards increased abstraction and technicality, chapter 5 showed that there is a change in the textbook texts which form part of this study. The texts are in general more abstract, more packed with information through grammatical metaphor, and they sometimes become more technical, in later grade levels. An issue of interest is then whether the student readers follow into this world of abstraction without problem.

The students’ encounter with the texts and activities with these qualities has not been dealt with up to this point. This chapter is an attempt to bring together the different features of texts and activities described in previous chapters and to describe the encounter between text, activity and student reader.

The influencing factors on a student’s encounter with a text are many and complex. The encounter between reader and text is e.g. influenced by the reader’s prior experience, in general, and of texts, as well as the purpose with the encounter (e.g. writing a similar short story vs. preparing a chemistry exam), and beliefs about the teacher’s goal with the reading (see e.g. Langer, 1995). The reading of a text is also influenced by the setting in which the reading takes place and the surrounding activities (e.g. Gunnarsson, 1982, Liberg, 2001).
However, earlier studies show that text-internal features also influence the encounter between reader and text. Apart from traditionally measured features of readability such as frequency counts for grammatical categories, syntactic features and cohesion relations (see discussion in Biber, 1991), the text’s degree of density and technicality are important for the outcome of the reading of the text. Investigations have also shown the importance of text-internal features such as abstraction. As mentioned, Sadoski, Goetz and Rodriguez (2000) investigate in an experimental study the effects of concreteness on comprehension, interestingness, and engagement in four different text types (persuasion, exposition, literary stories and narratives). The results of the study showed better gist recall for concrete texts than for abstract ones, for all four text types (Sadoski et al., 2000:92).

In this chapter I will focus on how students encounter texts with different qualities of abstraction, technicality, grammatical metaphor, mood and modality. In later sections I will describe the students’ reading of the texts in terms of text movability. The study of the students’ text movability is based on the group of students from the project Students’ encounters with different texts in school, described in chapter 3. However, the first central issue is how the students’ encounter with the texts can be described. Alternative frameworks for describing this encounter will also be discussed.

9.1 The encounter between the text and the reader

In order to describe the encounter between the texts with the above-mentioned features, and their readers, a model for the students’ reading of texts is needed. The students in this study are typically 11, 14 and 17 years of age. This means that the focus is on students who, in most cases, have already taken their first steps as readers and are acquainted with texts of different types. Subsequently, the relevant models for describing their reading are not primarily about the activities of decoding, but about their understanding and strategies for approaching different kinds of texts. Traditionally, reading has been regarded as a neutral activity, the outcome of which is primarily dependent on the text. In accordance with the general framework for this thesis and the project in general, the models for describing the students’ encounters with the texts also mostly originate in a socio-cultural domain of research, where the s in which the texts is involved are regarded as essential for the outcome of the students’ reading. During the last few decades, the research area targeting reading as a social act, where the individual is an active creator of meaning, has grown and developed (Liberg, 2004).

Common to the models described in this section is the description of the students’ approach to reading as something consisting of several s. However, the s described in these models are on different levels. I will describe these
models starting from the one with the broadest perspective, and then progress to the ones with a closer look at the student’s actual encounter with an actual text.

9.1.1 Models for describing the encounter between text and reader

Luke and Freebody (1997, 1999) present a visionary model of reading in school as a variable social practices that can be formed according to different social purposes. They map four quite broad s that they think correspond to the literate demands of postmodern culture, work and community (Luke & Freebody, 1997). In this four-step model they describe Coding Practices, Text-Meaning Practices, Pragmatic Practices and Critical Practices. The model presented by Luke and Freebody presents a stance quite opposite to the traditional view of reading as a neutral and isolated activity, by describing literacy as culturally defined. They present a vision of the teaching of literacy in school, based upon the kinds of text s that they consider to be necessary and desirable for members of a Western contemporary society. Their model can be placed within the area of critical literacy, in which an awareness of how, why and in whose interests certain texts work, is of utmost importance (Luke & Freebody, 2000).

A more detailed description of the encounter between a text and a group of students is presented by Palincsar, Brown and Campione (1993). They describe, within the framework of reciprocal teaching, structured dialogues as a method for students to approach texts (Palincsar et al., 1993). In this method, teachers and students take turns being the initiator of a discussion regarding a collectively read text. Four overall strategies are used to understand texts; asking questions, summarizing, clarifying and predicting. Palincsar et al. suggest that these strategies are the ones used by successful readers when they learn from texts. Their way of organizing them is only a more structured way of teaching strategies which are already present in skilful readers, and of making explicit the mental activities that are used for understanding texts (Palincsar et al., 1993). In this method, reading is described as a collective meaning-building activity, where the participants’ questions, meanings and opinions contribute to a meaning of a text.

Like Palinscar et al., Judith Langer’s (1995) stances for envisionment building focus on the student’s actual encounter with the text. Where Palinscar et al. build meaning from a group’s consensus of meaning, Langer’s envisionment building emphasizes the individual’s prior experience. Langer takes the concept envisionment as a starting point. She uses the term envisionment to refer to the world of understanding that a person has at a given time. From the perspective of understanding of literature as open to interpretation rather than fixed and predetermined, Langer describes envisionments...
as developing from four different stances (Langer, 1995). These stances are
not linear and can occur at various times in different patterns during the in-
teraction between the reader and the text; they focus on the moving in and
out of the actual text rather than on more general s involving texts. The
stances proposed by Langer are; Being Out and Stepping into an Envision-
ment, Being In and Moving Through an Envisionment, Stepping Out and
Rethinking What One Knows, and finally Stepping Out and Objectifying the
Experience.

Langer emphasizes the fact that the reading of literature in school is an
area where the subjective experience can be acknowledged as a part of un-
derstanding (Langer, 1995). In this way the individual’s prior experiences
and discursive history come to inflict the reading of texts. Interpretation is
essentially social, and she describes it, referring to Bakhtin, as “involving a
person’s mind in the intertextual web of personal history and experience”
(Langer, 1995). In Langer’s model, where the reading of literature is re-
garded as a subjective activity, space is left for the needs of the individual.
This is also the case in the model developed by Palincsar and Brown (1989),
where the questions from the students are allowed to influence the activity in
the classroom. Luke and Freebody’s (1997) vision of literacy, a heteroglos-
sical democracy where all texts are given an opportunity to be heard and
discussed, can also be regarded as a way of procuring dialogicality (Dysthe,
1996).

9.1.2 The development of readers

Traditionally, the understanding of texts is seen as following from decoding.
If a student learns to infer and predict, a deeper understanding naturally fol-
lows. If we describe reading as something that is done in different ways
strictly according to age and stemming from a natural development of the
mind, a student’s failure to read in a certain way comes to be a deficit in the
student. A model based on practices, rather than age-related stages of devel-
oment, has a value not only when it comes to describing diversity of ways
to handle texts, but also as regards the assessment of students’ reading abil-
ity.

The practices Luke and Freebody describe should not be interpreted as a
linear sequence of development or stages that are supposed to be taken in a
certain order. Luke and Freebody state that each practice is necessary but not
One interesting aspect of their model is that they include a practice of decoding
in their model, while most other models described here concentrate on
ways of reading separated from an initial step of decoding.58

58 From a traditional view of reading decoding is seen as something that precedes under-
standing (for example Lundberg, 1984:10). This strict separation between decoding and under-
Langer’s model focuses on the stances taken to create envisionments of texts during reading rather than on predetermined steps taken at different ages. Luke and Freebody describe broader practices involving texts. The last two perspectives emphasize the individual discursive background and history. Luke and Freebody maintain that one learns to handle texts in different ways by having the possibility of participating in s where texts are handled and used in different ways. How this is accomplished, how texts are used and handled, is dependent on what is regarded as valuable and meaningful in the cultural context (Luke & Freebody, 1997; Säljö, 2000; Baker, 1994). A student’s failure to do something with a text can then be viewed as a lack of practice rather than as a cognitive insufficiency.

9.2 The concept of text movability

The concept of text movability used in the project Students’ encounters with different texts in school is developed as a method of analysis which focuses on the possibility of handling texts in different ways. The concept of text movability is inspired by, among others, the models mentioned in the previous section. Liberg (2004) describes reading from the perspective of text movability as:

...reading can be seen as a changing path in a changing textual landscape. The texts, the reader's interests, previous knowledge and aims, the reader's situation are some of the mechanisms of importance to how the reader will move in the text and what ways of reading that will be used as support in the meaning-making. The reading of factual texts and literary texts, for example, may therefore be different. (Liberg, 2004:109)

The foundation of text movability is that for texts to serve as tools for learning, the student has to have an active relationship to these texts. A high degree of text movability is characterized by a dynamic relationship between the reader and the text. Readers with a high degree of movability show that they can move on a text surface as well as on a deeper text level. They can extract detail as well as discuss the text’s general message and perspective. They also have a dialogical relationship to the text and could be defined as active creators of the text’s meaning. Students that demonstrate a lower degree of text movability have difficulties both moving on the text’s surface

standing has been criticized by Liberg (1996), for example. Luke and Freebody’s model means a break from this view, since their practices are not linearly sequenced. 59

“...läsande kan ses som en föränderlig vandring i ett förändert textlandskap. Text, läsarens intressen, förkunskaper och syften, den situation läsaren befinner sig i är några framträdande styrmekanismer för hur läsaren kommer att röra sig i texten och vilka lässätt som används som stöd i meningsskapandet. Läsande av exempelvis sakprosa respektive skönlitteratur kan därmed komma att skilja sig åt.” (Liberg, 2004:109), AE:s translation
and discussing deeper levels of the text. These students see the text as an authority and discuss isolated facts they can extract from the text. This is an example of a monological relationship with the text, where the student has no real contact with it. Text movability can therefore be described in terms of a more superficial level and a deeper level. Marton et al. (1984) discusses how students read texts on a superficial and a deeper level.

The notion of text movability has features in common with all three of the models mentioned in the previous sections. The view that a critical approach towards a text is desirable is shared with Luke and Freebody’s model of reading. The importance of asking questions, summarizing and clarifying is shared with Palincsar and Brown’s (1989) strategies to understand texts. Finally, text movability is related to Langer’s stances of envisioning literature (1995) in the movement within and the distancing from the texts as equally important.

The assessment of students’ text movability is based on activities where the students:

- state the main content of the text
- summarize the text with their own words
- use the text to understand unfamiliar words
- comment on the text in an independent and detailed way
- fill in gaps in the text, reading between the lines
- generalize and abstract from main points in the text, distance themselves from the text, express reflections on motives, feelings and relationships expressed in the text
- question the text, focus on the text’s message, express opinions about the text in an independent way, examine the text critically

The activities described in the list above are ranked from those oriented towards a superficial reading of the text at the top, to those oriented towards a deeper understanding of the text and the end of the list. The assessment of the student’s text movability is based on several instances from the semi-structured interviews about the texts, where the activities described above are involved. In the interviews about the texts, we have chosen to include questions which give the students the opportunity to demonstrate the activities described in the list. Students in the discussion who limit their activities to those from the top of the category list are considered as showing low text movability in the specific text. Students who demonstrate a wide range of different activities, from stating the content to critically examining the text, are assessed as showing high text movability.
The basis for an analysis of text movability lies in how students talk about texts they have read\textsuperscript{60}. Naturally, students’ comments on texts they have read vary to a great extent. As the intention of the concept of text movability is to cover different ways of approaching texts, variation in responses ranging from monosyllabic answers about a detail to elaborated generalizations can be seen as exemplifying different kinds of text movability.

The following section includes examples of different activities relevant to the assessment of text movability. The examples are organized in a sequence consistent with the list of text movability activities.

A surface movability can consist of only picking out some of the words in the text. Anna, in grade 5, has read a text about the history of Russia and finds it difficult to explain the gist of the text.

\textbf{AE} well is there anything else you remember Anna? (nåe ere nått annat som du kommer ihåg Anna?)

\textbf{Anna} mm, I don’t know how to put it Jo Josepp e I don’t remember his last name but he was a ruler or whatever you call it of the Soviet Union, and e e yeah, during the Second World War Estonia Latvia and Lithuania were also part of the Soviet Union (mm, va ska man säga Jo Josepp ja kommer inte ihåg va han hette i eftermann men han var en behärskare eller va ska man säga i Sovjetunionen, och ä ä ja under andra världskriget da så var Estland Lettland å Litauen också a me i Sovjetunionen)

\textbf{AE} mm (mm)

\textbf{Anna} and others what's it called what's it called communism and e satellite states to the Soviet (och andra ä va heter de att in i va heter de kommunismen och ä i lydstater till Sovjetunionen)

Anna is to some extent able to move on the text’s surface. She can isolate the main topic of the text and pick out a few central actors in it, but does not really demonstrate any deeper text movability in the text. The sequence above shows this but it also indicates a familiarity with a practice of answering questions with details rather than with meaning-making.

The following extract contains an example of a more fluent superficial movability. Alisa, in grade 5, has read a fairy tale about a boy and a giant, and retells part of the story accurately but does not, on her own initiative, generalize or reflect on the text.

\textbf{AE} well what’s the story about? (ja vad handlar sagan om?)

\textbf{Alisa} It was like a boy he was like poor and and then once when he was going into the forest ha saw a giant, the giant said what are you doing here? Well yes the giant wanted to frighten the boy and eat him

\textsuperscript{60} In the project Students’ encounters with different texts in school, text movability is also used in the analysis of student texts, see e.g. Geijerstam, 2004; Folkeryd et al., 2006.
but his well he said like come and compete, he took a stone and then crushed it
(de va så här en pojke han va så här lite fattig så där ä a ä en sen de
en gång när han skulle gå ut i skogen sen såg han en jätte, jätten sa
va gör du här sen ja så där ja jätten ville skrämma bort pojken å
åta upp honom fast hans ja fast han sa så här kom å tävla han tog
en sten å sen krossade den)

Apparent in Alisa’s relating of the story is her understanding of the story. She moves freely from one event to another and seems to have the overall sequence of events clear in her mind.

A type of movability that suggests a deeper understanding of the text can be found in the example below. Kristina in grade 8 has read a short story and reflects on the message.

AE

what is the message in the text? (vad har texten för budskap?)
Kristina

that looks shouldn’t mean, well the message that before before they
could see each other or what should I say they liked each other they
were friends and like but then there was bloodshed so it probably
meant that the inside is more important than the outside
(att utseende ska inte betyda, liksom budskapet att innan innan dom
såg varann eller innan dom såg sej i spegeln eller va man ska såga
så, så gilla dom ju varann, dom va kompisar å så men sen efter så
blev de ju blodbad, så de visa nog att de inre har större betydelse än
de yttre)

AE

would anyone disagree with this message?
(Kanske någon kunde tycka illa om de här budskapet?)
Kristina

no I think it’s a very nice message I think, it’s better to judge from the
inside instead of the outside you shouldn’t judge by appearance, I
think it’s crazy
(nää ja tycker inte de de e ett väldigt fint budskap tycker ja alltså, de
e väl bättre att man går efter inre än yttre för man ska ju inte döma
efter utseende tycker ja de e ju helt vainsinnigt tycker ja)

Kristina readily discusses the main message in the text. She summarizes the
text content and from the summary can easily condense the message of the
text. This example clearly shows how surface movability, in the summary of
text, is a necessary condition for deeper movability in a conclusion of the
text’s message.

Another aspect of a deeper movability in the text is the ability to discuss
and relate to the motives and feelings of the text’s central actors. Ellen in
grade 5 has read a text in social science about the Russian revolution and the
era of the Soviet Union. Voluntarily, she discusses the motives behind the
actions of the political leaders.

AE

is there anything you miss Ellen, is there anything you would’ve liked
to learn more about?
(m e de nått som du saknar Ellen e de nått du skulle vilja veta mer
om här?)
Ellen well about Stalin and Lenin perhaps I would like to learn more about what they did and … why they were so cruel and why they were so suspicious and why they killed so many like what were the reasons there must have been there can't be only one reason for him being so suspicious ha can't have executed several people I don't know just because of one thing it might have been more…

(ja de va väl Stalin å Lenin kanske skulle ja kanske vill veta lite mer om va dom gjorde å så där och å varför dom va så grymma å varför dom va så misstänksamma å varför dom dödade så många liksom för vilka skäl de måste ju va de kan inte bara va ett skäl för att han va misstänksam då kan han inte ha å han kan inte ha avrättat flera stycken asså ja ja vet inte riktigt hur de va å för bara en sak de kanske va lite mer)

AE complicated

(komplicerat)

Ellen different reasons

(olika anledningar)

Ellen’s reflections show a deeper understanding of the text where she reflects not only on direct text content but also on the feelings and motives of the participants in a historical setting. She is also able to express a wish for further explanation in the text, that is, she has an ability to visualize how the text could be different.

Another important feature of text movability is the possibility to distance oneself from the text and examine it from distance. Lisa and Sara, reading a literary text in grade 11, demonstrate this ability to discuss the text from a distance. The students also show an awareness of the text type and the effects of it.

AE it's written like a documentary, isn't it?

(va den lite alltså skriven som en dokumentär eller?)

Lisa m more like that than an ordinary story

(m mer åt de hållet än som en vanlig berättelse)

Sara cause she interviews this person that it is about it says "like she said" an so on and they've included the poems she'd written during the hard times and in the beginning of each chapter there's a poem, it kind of fun

(för hon intervjuar den här som de handlar om så stod de hon sa å så där så hade dom tagit med hennes dikter som hon hade skrivit när de va så där jobbigt å så där i början på varje kapitel så e de en dikt så de e lite kul)

AE but was it different in a good way or in a bad way?

(men va den annorlunda på ett bra sätt eller ett dåligt sätt?)

Lisa in a good way I think it’s interesting when you understand that it’s real, you understand that it’s not just stories

(på ett bra sätt ja tycker de e intressant när man förstår att de e liksom på verklighet, man förstår så här att de e inte bara liksom sa- gor)

Sara you kind of get how bad it is, if it had been made up it had been made up, now like everything had really happened
Having exemplified text movability in this way, i.e., how it ranges from surface movability in the text to deeper movability, it is important to emphasize that different ways of reading texts are functional and privileged in different settings. A more surface understanding of a text is functional when it comes to retrieving information and answering direct content questions. Then again, a surface understanding of a text is not sufficient in other settings.

9.3 Tendencies of text movability

In this section, I will describe in more detail some of the results from the project that concern reading and textbook texts. The first of these results concerns the decline in low-achieving students’ text movability in later grades. The second tendency involves an overall trend that students’ text movability differs in different subject areas. These tendencies are also discussed in Folkeryd, af Geijerstam and Edling, 2006.

As described in section 3.4, and in the beginning of this chapter, the students’ degree of text movability, as the assessment of all categories in the analytical framework, has been judged on the three-graded scale into a low, an intermediate and a high degree of text movability.

9.3.1 Low-achieving students’ text movability seems to decrease

One of the general tendencies from the project *Students’ encounters with different texts in school* was a decrease of in low-achieving students’ text movability in higher grades. Generally, while students who had been assessed by their teachers as high-achieving seemed to move in texts in the same degree in grade 8 as in grade 5, low-achieving students in grade 8 showed less ability for text movability in texts than the low-achieving students in grade 5. The general tendency in the project concerned text movability in textbook texts as well as in the students’ own texts. In this section I will describe the text movability in the three investigated subject areas and any differences across grade levels. I will focus on the low-achieving students’ text movability. This focus on low-achieving students is in accordance with the general focus of low-achieving students in the project *Students’ encounters with different texts in school*.

According to the literature (e.g. Martin, 1997), there is an increase in the degree of abstraction in the text between primary and secondary school. An increasing degree of abstraction in the texts in this study was also described in chapter 5. Texts were generally more abstract in all three subject areas in
grade 11 than in grade 5. The description of the students’ text movability will therefore be brought together with a description of the texts’ features, described in earlier sections.

9.3.2 Text movability in Swedish literary text

The title of this chapter emphasizes the encounter between text, activity and reader. In order to bring together the textual features described in chapter 5 and 6 and the activities described in chapter 7, a general outline of these features has been made. This general outline can be seen as a context for the students’ text movability in these texts. The general outline of the features of the Swedish literary texts is described in table 34.

The assessment of the different features is in most cases made in comparison with the other subject areas, e.g. the degree of abstraction in the Swedish literary texts is low in comparison with the social science and natural science texts. The only exception is the degree of modality, where the differences between subject areas are small, but earlier studies show that textbook texts in general have a low degree of modality.

Table 34. A general outline of the results from previous chapters concerning the features of the Swedish literary texts and the related activities

<table>
<thead>
<tr>
<th>Features of the texts and the activities</th>
<th>Swedish literary texts</th>
</tr>
</thead>
<tbody>
<tr>
<td>degree of abstraction</td>
<td>low</td>
</tr>
<tr>
<td>shifts between abstraction levels</td>
<td>limited</td>
</tr>
<tr>
<td>degree of grammatical metaphor</td>
<td>low</td>
</tr>
<tr>
<td>technicality</td>
<td>low</td>
</tr>
<tr>
<td>mood</td>
<td>-</td>
</tr>
<tr>
<td>modality (in comparison to other genres)</td>
<td>-</td>
</tr>
<tr>
<td>dialogicality of the activity</td>
<td>monological and dialogical text activities</td>
</tr>
</tbody>
</table>

As mentioned, the Swedish literary texts are not especially abstract in comparison to the texts from the other subject areas. However, the degree of generality and abstraction in the texts is higher in later grade levels. The degree of technical referents is not significantly different in the different grade levels, but low in comparison to the other subject areas. However, this is not so surprising since there is no specialized discourse to develop within the field of Swedish literary texts, in the same sense as in the content areas. There are comparatively few grammatical metaphors, but a higher degree of them in grade 8 in comparison to grade 5. In comparison with the other subject areas, the activities involving Swedish literary texts are to a greater extent dialogical, especially in later grade levels.

The difference between the text movability of the low-achieving students in grade 5 and the students in grade 8 and grade 11, is illustrated in Figure 23.
The degrees of text movability presented in Figure 23 suggest a difference of students’ text movability between grades 5 and 8. Where no low-achieving students in grade 5 showed low movability in the Swedish Literary texts, 29% of the corresponding group of students in grade 8, and 31% of the students in grade 11, had great difficulty in moving in the texts, in summarizing the central content, in discussing the texts’ message and possible motives of the participants. There is no large difference between the students’ text movability in grade 8 and grade 11.

Figure 23 shows that the text movability is lower in grades 8 and 11 than in grade 5. The degree of abstraction in the texts and the degree of grammatical metaphor change across the grade levels, the Swedish Literary texts becoming increasingly more abstract and more packed with information. Despite the increase in abstraction the low-achieving students show largely good movability in the Swedish literary texts. Two thirds of the low-achieving students manage to demonstrate an intermediate or high degree of text movability, even in grades 8 and 11.

9.3.3 Text movability in social science texts

When it comes to the text movability in social science texts the picture is different. In comparison to the Swedish literary text, the text movability is considerably lower in the social science texts in all the grade levels in the study.

The social science texts in the study in general have the features described in Table 35.
Table 35. A general outline of the results from previous chapters concerning the features of the social science texts and the related activities

<table>
<thead>
<tr>
<th>Features of the texts and the activities</th>
<th>Social science texts</th>
</tr>
</thead>
<tbody>
<tr>
<td>degree of abstraction</td>
<td>medium</td>
</tr>
<tr>
<td>shifts between abstraction levels</td>
<td>varied</td>
</tr>
<tr>
<td>degree of grammatical metaphor</td>
<td>high</td>
</tr>
<tr>
<td>technicality</td>
<td>medium</td>
</tr>
<tr>
<td>mood</td>
<td>declarative</td>
</tr>
<tr>
<td>modality (in comparison to other genres)</td>
<td>low</td>
</tr>
<tr>
<td>dialogicality of the activity</td>
<td>predominantly monological text activities</td>
</tr>
</tbody>
</table>

The degree of abstraction in the social science texts is higher in comparison with the Swedish literary texts. As mentioned, the differences between the degrees of abstraction in different grade levels are significant but not very large in the social science texts. Especially the level of generalized referents in the social science texts is very similar across the three grade levels. Compared to the Swedish literary texts the degree of general referents is high in these texts. While the degree of generality seems to remain more or less the same in texts from all three grade levels, the degree of specific referents decreases while the degree of abstract referents increases with grade level. The shifts between abstraction levels in the social science texts are numerous and varied in comparison to the texts from the other subject areas.

Another interesting characteristic of these texts is the degree of technicality. There is a significant difference of technicality in the texts of different grade levels. However, this is not an expected increase in technicality but a decrease. As mentioned, the occurrence of grammatical metaphors is higher in grade 8 compared to grade 5. The activities which involve the social science texts are predominantly monological and reproducing.
There is no large difference in the degree of text movability between low-achieving students in grades 5, 8 and 11. The overall picture of text movability in the social science texts is that the low-achieving students in all grades move with more or less the same difficulty, or ease, in the texts. The texts are more abstract in later grades but the differences between grades are smaller than the differences in the Swedish literary texts. The degree of technical referents is lower, rather than higher in grades 8 and 11, in comparison to grade 5. The information in the texts seems to become denser, through grammatical metaphor, in grades 8 and 11, compared to grade 5. In comparison with the Swedish literary texts, the social science texts seem to be more challenging to the low-achieving students.

9.3.4 Text movability in natural science texts

All things considered, the overall text movability in natural science texts is low. The predominant value for the low-achieving students in grades 8 and 11 is the low value. In other words, more than half of the low-achieving students have great difficulty moving in these texts.

As mentioned, the natural science texts in the study have the features presented in table 36.
Table 36. A general outline of the results from previous chapters concerning the features of the natural science texts and the related activities.

<table>
<thead>
<tr>
<th>Features of the texts and the activities</th>
<th>Natural science texts</th>
</tr>
</thead>
<tbody>
<tr>
<td>degree of abstraction</td>
<td>high</td>
</tr>
<tr>
<td>shifts between abstraction levels</td>
<td>limited</td>
</tr>
<tr>
<td>degree of grammatical metaphor</td>
<td>high</td>
</tr>
<tr>
<td>technicality</td>
<td>high</td>
</tr>
<tr>
<td>mood</td>
<td>declarative</td>
</tr>
<tr>
<td>modality (in comparison to other genres)</td>
<td>low</td>
</tr>
<tr>
<td>dialogicality of the activity</td>
<td>predominantly monological text activities</td>
</tr>
</tbody>
</table>

Compared to the texts in the other subject areas, the natural science texts are also the most generalized and abstract texts in the study. Very few of the referents are specific. Starting from a comparatively high degree of abstraction, technicality and grammatical metaphor in grade 5, the texts are even more abstract and generalized in grade 8 and grade 11. There are few shifts between abstraction levels and their functions are limited in range. The activities which involve natural science texts are predominantly monological and reproducing.

Figure 25. Low-achieving students’ text movability in natural science texts.

When studying a graphic representation of percentages of text movability, it is notable that 31% of the students in grade 5 showed low text movability compared with 58% in grade 8 and 59% in grade 11.

The students showed the overall lowest degree of text movability in the natural science texts. Almost 60% of the low-achieving students in grades 8 and 11 have great difficulty moving in the texts. The natural science texts are also the most abstract texts in the study. Even in grade 5 there are very few specific referents.
9.4 A general outline of the features of the texts, text activities and text movability in the different subject areas

A combined analysis of the three grade levels shows the differences between the text movability in the different subject areas presented in Figure 26.

![Figure 26. Low-achieving students’ text movability in different subject areas](image)

The previous chapters have described features of the texts and the activities in the study. These features have been generally outlined in the different subject areas separately, in the previous sections. Table 37 can be seen as a general representation of the encounter between texts, activities and reader in this study. All the features of the different subject areas are combined in Table 37, and also brought together with the general results of the students’ text movability.

Table 37. A general outline of the results from previous chapters concerning the features of the texts and the activities in all three subject areas.

<table>
<thead>
<tr>
<th>Features of the texts and the activities</th>
<th>Swedish literary texts</th>
<th>Social science texts</th>
<th>Natural science texts</th>
</tr>
</thead>
<tbody>
<tr>
<td>degree of abstraction</td>
<td>low</td>
<td>medium</td>
<td>high</td>
</tr>
<tr>
<td>shifts between abstraction levels</td>
<td>limited</td>
<td>varied</td>
<td>limited</td>
</tr>
<tr>
<td>degree of grammatical metaphor</td>
<td>low</td>
<td>high</td>
<td>high</td>
</tr>
<tr>
<td>technicality</td>
<td>low</td>
<td>medium</td>
<td>high</td>
</tr>
<tr>
<td>mood</td>
<td>-</td>
<td>declarative</td>
<td>declarative</td>
</tr>
<tr>
<td>modality (in comparison to other)</td>
<td>-</td>
<td></td>
<td>low</td>
</tr>
</tbody>
</table>
There are several plausible reasons for the students' greater ease of movement in the literary texts in the Swedish classes. As mentioned, the texts are less abstract, dense and technical than the texts in the other subject areas. But the familiarity with the type of text is also important. Most children have been familiar with narratives since early childhood. When they encounter narrative texts in school, they do not have any trouble recognizing the structure or the typical actors and outcomes of a story. This is not usually the situation when it comes to the content area texts. The typically generalized or abstract and technical referents in social science and natural science texts, as well as the dense structure of these texts, are new to most students and might therefore hinder their moving freely in these texts.

Another possible explanation for the differences in text movability lies in the activities surrounding the texts. The form and function of texts are more often discussed in the Swedish classrooms, but not in the social science and natural science classrooms. In comparison with the other subject areas the activities are more dialogical. The reading of the text in itself can be a goal in the teaching of Swedish. Quite the opposite is the traditional view of reading within social science and natural science. The text activities in these subject areas are predominantly monological and reproducing. In these subject areas, reading is often regarded as a means to absorb, and maybe use, the content of a text.

### 9.5 Abstraction types and text movability

Apparently, students’ movability is lower in some of the subject area texts which have higher degrees of abstraction. Is it possible to distinguish the same pattern when analyzing text movability and the abstraction types described in chapter 6? The comparison between the students’ text movability and the texts has hitherto been based on a classification of subject areas. A comparison of interest is then between the classification of the text based solely on abstraction and the students’ text movability in these texts.

Figure 27 presents the results of the text movability in texts of different abstraction types. As mentioned, in the labeling of abstraction types, the \( L \) indicates a low degree, the \( I \) an intermediate, and the \( H \) a high degree of
abstraction. The first letter refers to the degree of specificity, the second to the degree of generality and the third to the degree of abstraction.

![Low-achieving students' text movability in texts of different abstraction types](image)

Figure 27. Percentages of text movability in texts of different abstraction types.

Especially in the low degrees of text movability it is possible to note a difference between different abstraction types. The classification of the texts into abstraction types gives a more focused picture of the texts’ abstraction than the classification of the texts from the perspective of subject areas. It is therefore interesting to note that there are significant differences in the text movability in texts of different abstraction types. While about five percent of the students had great difficulty moving in the highly specific HLL-text, almost 50 percent of all students could not move in, or moved with great difficulty in the most abstract LII-texts.

As mentioned, the classification of abstraction types is done independently of the subject areas. Subsequently, the results show that the students seem to find it more challenging, thus showing lower text movability, in texts with a high degree of abstraction, regardless of which subject area the texts belong to.

9.6 Conclusion

The influencing factors on a student’s encounter with a text are numerous and complex. However, investigations have shown the importance of text-internal features such as abstraction (e.g. Sadoski et al. 2000).

Using the concept of text movability, it is possible to describe students’ ways of moving within a text, of relating to texts and regarding themselves as interlocutors in a textual activity. The results of this study show that stu-
dents who are considered to be low-achieving by their teachers display lower
degrees of text movability in grade 8, than the low-achieving students in
grade 5 in Swedish literary texts and natural science texts. The high-
achieving students’ did not have the same tendency towards lower text mov-
ability in higher grade levels. The students’ text movability in social Science
did not follow the same pattern, but showed more or less the same low de-
gree of text movability across the three grade levels.

As discussed elsewhere (e.g. Folkeryd et al., 2006), one plausible expla-
nation for this negative development of text movability could be found in the
shift towards more specialized subject areas and texts in grade 8. This shift
towards specialized subject areas, when it comes to lexicogrammatical re-
sources, among other resources, could be expressed as an increasing degree
of abstraction. Martin (1997) states that the move from non-metaphorical to
metaphorical texts happens somewhere between primary and secondary
school, at the same time as school texts develop more disciplinary specific
features:

The move from non-metaphorical to metaphorical text is in some sense sym-
bolized across literate cultures by the separation of primary and secondary
schooling and the drift from thematically organized multidisciplinary units of
work in primary school to strongly classified discipline specific work in sec-
ondary school. (Martin, 1997:30)

In addition, Derewianka (2003) shows, when it comes to grammatical meta-
phor, that it is only at the age of 9-10 that there is a substantial increase in
children’s use of grammatical metaphor.

One of the many factors influencing the low-achieving students’ decreasing
text movability could be the increasing abstraction of the texts. Earlier
research has shown that the increasing degree of abstraction is connected to
a transition towards more discipline-specific texts and activities in class-
rooms. In our study, students assessed as high-achieving seem to follow into
these more specific and specialized discourses, while the low-achieving stu-
dents do not. The low-achieving students especially seem to have difficulty
stepping into the generalized and abstract world of natural science. The same
tendency can be found when comparing the students’ text movability in texts
with different abstraction patterns. The low-achieving students’ text mov-
ability is lower in the texts with the highest degree of abstraction, compared
with the texts with the lowest degree of abstraction.
CHAPTER 10
Summary and conclusions

This chapter will summarize some of the results from the previous chapters and discuss further some of the pedagogical implications of these findings. Why is the language of schooling important? What does it mean to introduce students to specialized language? Is abstraction in texts a problem?

10.1. Results presented in previous chapters

During a few hours of a school day, a student might read texts which are very different when it comes to abstraction. But what is abstraction and how can it be measured in texts?

An important part of the thesis consists of the theoretical discussion of the concept of abstraction in chapter 4. There I discuss the related scales of concrete-abstract and specific-generalized. In an educational setting generalization can be seen as a transitional stage towards abstraction and is therefore important when it comes to analyzing textbooks. In this chapter I present a new three-graded categorization of abstraction which takes into account both the features of the specific-generalized and the concrete-abstract. The referents in the texts are thus categorized as being either specific, generalized or abstract. An important part of the analysis of abstraction is that it is sensitive to text context, i.e. that a word in one context can refer to a more specific referent while in another context to a more generalized referent.

The focus of this thesis is on the transition from everyday language to specialized language with special attention to abstraction. The investigations presented in chapter 5, based on the definition from chapter 4, showed that texts from different subject areas display different patterns of abstraction. In our corpus, the Swedish literary texts had in comparison to the other texts, the highest degree of specific referents and the lowest degree of general and abstract referents. The social science texts had fewer specific referents and more general and abstract referents and the natural science texts were to a lower degree about specific referents and dealt even more with general and abstract referents.

The degrees of abstraction in the texts not only differ with respect to subject area but also in relation to grade level. Results from the work presented
in this thesis show that the degree of abstraction in the textbook texts increases in later grade levels. Alongside this development, there was an increase in grammatical metaphors in the texts from grades 5 to grade 8.

Almost all texts had referents from all three categories of abstraction. Specificity, generality and abstraction in these texts can therefore be regarded as something that all texts have to varying degrees, not as a property that the texts do or do not have.

One of the aims of the thesis was on a methodological level to develop ways of describing abstraction, in the text as a whole as well as the shifts of abstraction within texts. The results from chapter 5 led to an investigation of how levels of abstraction shift within texts in chapter 6. The shifts between the levels of abstraction were also assessed with regard to function. It was interesting to note that the texts with a medium degree of abstraction, the social science texts, were the ones with the greatest variety in shifts with different functions. These texts demonstrate a rich variety in ways of entering levels of specific, general and abstract referents. The Swedish literary texts and the natural science texts, despite their different degrees of abstraction, shared the feature of having relatively few shifts with rather few different functions. Even though the Swedish literary texts and the natural science texts both had few and not so varied shifts, the functions of the shifts differ with respect to their setting in different cultural domains. The shifts in the Swedish literary texts in general belonged to the everyday domain with specific, concrete referents and everyday types of generality and abstraction. The shifts in the natural science texts in general, belonged to a specialized domain. In comparison to the texts from the other subject areas, the shifts in the social science texts had features of an everyday as well as of a specialized domain.

The relationship between abstraction and text content was also studied in chapter 6. The texts were classified on the basis of their different patterns of abstraction. In this classification, six different patterns were identified. These patterns were identified without regard to subject area. An analysis of the dominant cohesive chains of the texts made clear that texts which shared pattern of abstraction also shared features when it came to content and world view.

An aim of the thesis was to develop the understanding of the relationship between author and reader in the texts through an analysis of mood and modality. In chapter 7, the starting point was the expression of authority in the textbook texts. Earlier research shows that in comparison to other text types, textbook texts present knowledge in a more authoritative and less dialogical way. The results from my investigation of modality in the Swedish textbook texts confirm the earlier findings from English and Spanish textbooks. However, in the Swedish texts a comparison between texts from different grade levels showed a tendency towards increasing modality. The results can be
interpreted as a trend suggesting that texts from later grade levels present knowledge in a less authoritative and more dialogical way.

In a context where the textbooks present knowledge in an authoritative way, it is important that the activities surrounding the texts encourage the students to discuss, question and critically examine this knowledge. Chapter 8 described the activities in the classrooms from the perspective of dialogicality and focused especially on the introduction of the text, the instruction on how to read the text and finally the follow-up activities after reading the text. The results show that especially in the content area classrooms a majority of these activities aimed at reproducing knowledge in a monological way rather than at producing knowledge in a dialogical way.

An overall ambition in the work presented in this thesis was to connect the analysis of the texts to the contexts of use and the student readers. Chapter 9 concerns the students’ reading of the texts and the texts’ degree of abstraction. Even though many factors influence the encounter between reader and text, abstraction in texts is mentioned as one of these influencing factors. The students’ ability to use the texts was discussed through the concept of text movability. The general trend in this study was that the students showed lower degrees of text movability in texts with a high degree of abstraction.

The most important results of the investigations presented in this thesis concern:

- Theoretical discussion of the concept of abstraction and the three-graded scale of abstraction with specificity, generalization and abstraction. The analysis is sensitive to context.
- The comparison between degrees of abstraction in Swedish literary text, social science texts and natural science texts from different grade levels.
- The new methods for describing shifts between abstraction levels within texts and the results of these studies of shifts from texts from different subjects and grade levels.
- The connection between text with different patterns of abstraction and their content.

10.2 Discussion and conclusions

The results presented in previous chapters raise possible implications as well as questions for further research. Pedagogical implications of the results from previous chapters include a discussion of the usage of features that make texts more accessible and a discussion of which textual practices are important to come across in school.

Not much work has been done in the area of abstraction in text. Areas of further interest include additional investigations of abstraction in larger cor-
pora of school texts as well as in larger corpora of texts from other fields. Of interest is also a study of abstraction in relation to other textual features and studies of abstraction in relation to other textual organizations, e.g. genre.

A result from the study of mood and modality suggested that the modality of the textbook text seemed to increase in later grade levels. This could be seen as an indication of textbook authors not wanting to trouble the younger parts of the population with alternative and maybe counterfactual interpretations of phenomena. This trend would be interesting to test on larger and more reliable number of texts from different stages of the educational system. Relevant in such a study is the discussion of the view on knowledge and perspectives on children’s ability to learn.

10.2.1 Texts in schools and school in texts

As earlier mentioned, teacher-sanctioned texts in school have a unique role as mandatory reading material for a large group of the population. They also often constitute a dominant part of students’ encounter with content area texts. Textbooks are thus important in their function as transition tools towards adult specialized literacies.

But textbooks are especially interesting due to the special conditions in which they occur. School has the difficult task of introducing children to the texts and discourses of official knowledge. But participating in school practices where texts are involved also means learning what counts as legitimate cultural logic in texts and institutions:

In this way, what is to count as official knowledge and what forms of difference are affiliated with the knowledge and are mediated by authoritative intervention and community governance. (Luke, 1995:24)

From this perspective, the teaching of reading and writing in school can be seen as a process whereby an institution which provides students with filters of possible ways of interpreting reality. Reading from this perspective is not primarily a personal skill and understanding, but a way of interpreting texts that is taught and sanctioned by a certain paradigm.

In line with the view of the importance of the social practices that surround texts, Veel (1997) describes how the language of school science agrees with some ways to think but hinders, or at least marginalizes, others. His point is that being literate in school science is not merely a mechanical ability, but an apprenticeship in how to view the world.

The context of reading in school legitimates and sanctions ways of encountering texts. The results of this study show that especially in the content area classrooms, a majority of the text activities resulted in students’ reproduction of knowledge in a monological way, rather than their producing knowledge in a dialogical way. With primarily monological reading prac-
tices the students come to be defined as receivers of text content, rather than as active creators of meaning. In a context where the reproductive reading is the dominant form, it is not surprising that the students adjust to this praxis (Anward, 2005). Another issue is whether reproducing text cultures as such is preferable. With almost exclusively reproductive text practices in the content area subjects, students are left without tools to discuss and reflect critically on scientific research as an activity invented and performed by human beings.

The texts of schooling as well as school knowledge are different from other academic texts and kinds of knowledge. These differences lie partly in the underlying conditions for their existence. School-based texts are written with their school context and their student readers in mind. Gee (2003:30) states that even though there is a crucial connection between texts and the social practices they are part of, this connection is often ignored in schools. Children are often required to read texts, and be tested on text content, without being introduced to any knowledge of the surrounding social practices of the corresponding academic discipline. “Children can often answer such questions, but they learn and know nothing about the genres and social practices that are, in the end, the heart and soul of literacy.”

Veel (1997) discusses this form of recontextualization that involves taking discourse from one context (scientific discourse) and reformulating it in another context (school science). He argues that the recontextualizations of science in school are necessary in part, since the pedagogical generalizations and simplifications make it easier to access and are therefore perhaps indispensable in a pedagogical context. However, the same process of generalization and simplification also poses problems. Without a description of the socio-historic activities that led to the scientific knowledge of today, and without a scientific openness towards new findings and conclusions, school science tends to present scientific knowledge as an “abstract, impersonal, body of facts” (Veel, 1997:169). The results from the study in this thesis show that the Swedish textbook texts examined are similar to the American and Spanish textbooks in this respect. This way of presenting knowledge becomes especially problematic in combination with the authoritative way of presenting knowledge that is typical of a context of schooling.

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61 A similar suggestion is made by Öhman (1993) in his critique of popular science. He emphasizes that popular science has little to do with science in general since it presents explanations without providing the necessary basis for understanding the conditions in which the explanation is relevant. Without this necessary basis, a reader of popular science has to rely on the writer’s authority to accept the explanations given. In this sense popular science does not promote independence towards expertise in different subject areas, as suggested from time to time, but rather works towards increased dependency on authorities.
10.2.2 Is abstraction a problem?

A large part of this thesis deals with different aspects of abstraction in textbook texts. Abstraction in general can be viewed as an essential feature of specialized texts in a society where expertise and specialization are increasingly significant. Abstraction is then an important feature of a grammar “that organises text, that summarises and abstracts, that encapsulates ‘big’ meanings for use elsewhere—a grammar for writing that nominalises rampantly and turns the universe into a set of interrelated things: a grammar that counts.” (Martin, 1993a:135). From this perspective abstraction is a textual technique, among other techniques, that enables certain kinds of meanings to be expressed in an adequate and effective way.

But the view of abstraction as enabling large meanings in a concise form is not the only understanding of abstraction. In some contexts, abstraction is regarded as a feature that complicates and hinders students’ access to texts. In a pedagogical context, where researchers discuss ways of facilitating the encounter between reader and text, abstraction, as well as other features of specialized discourses, is sometimes seen as problematic.

As mentioned, several psycho-linguistic studies (e.g. Sadoski, Goetz and Rodriguez, 2000:92) show results of the “concreteness-effect”, i.e. better gist recall for concrete texts than for abstract ones. In fact, in the present study, the students’ text movability is lower in the texts with the highest degree of abstraction, the LII texts, compared to the texts with the lowest degree of abstraction, the HLL texts.

Other researchers go as far as to suggest a removal of features of specialized language in textbook texts, in order to increase students’ understanding. An example of this is Beck and McKeown’s study (1995) where they manipulated texts towards, among other things, increased concreteness and colloquial language. Their results showed that the manipulated texts improved students’ results on a reading comprehension test, in comparison to their result after reading the original text.

But a result of these studies can hardly be that all texts in school should be made as concrete and specific as possible. Reading more abstract texts and moving between different levels of abstraction is an important part of education. This also becomes related to the question of citizens’ access to different kinds of texts in society.

The questions of abstraction and knowledge are combined in a discussion by Macken-Horarik (1996). In her model of the three cultural domains in which learning occurs (the everyday domain, the specialized domain and the reflexive domain) she mentions abstraction, together with technicality, as the “the linguistic technology of discipline knowledge” (Macken-Horarik, 1996:250). According to Macken-Horarik many teachers make the specialized knowledge of school more like everyday knowledge in order to bridge the gap between the registers of ‘disadvantaged students’ outside school, and
the registers they need to command to do well in higher education. But Macken-Horarik claims that students from these classrooms are left with nothing but a school version of everyday knowledge and that their choices later in life are thus reduced.

Using Macken-Horarik’s cultural domains, there is nothing surprising in results from studies that show that students reading comprehension is increased by concrete texts and colloquial language. Such texts simply have more features of the kind of language and the kind of knowledge that belong to the everyday domain. Children are familiar with this cultural domain from early childhood. Another issue is which kind of texts and which kinds of knowledge students benefit from in the long run.

If we want students to be able to participate in and benefit from the official texts in a society, textbooks where abstract and technical language systematically is replaced by concrete and colloquial language are not optimal. These kinds of texts leave children unprepared for the texts that they are supposed to deal with as citizens in a society heavily dependent on specialized language.

But a possible way of handling the difficult transition towards specialized texts could lie in the process. In chapter 3, three central aspects of learning were discussed: Who is going to learn?, What is to be learned? and How is this going to be learned?. The third aspect of how is central to the encounter between reader and texts. The results from the work presented in this thesis show that the texts in all studied subject become more abstract in later grade levels and that many low-achievers in later years have great difficulty using and discussing the texts. Text activities supporting the transition from more everyday texts to more specialized ones could enhance this encounter. The transition towards specialized language in focus in this thesis would then not only take place in the texts but also in the students’ increased repertoire of ways of dealing with specialized texts.
Abstraktion och auktoritet i textböcker – de textuella vägarna in i mer specialiserat språk


Syfte

Syftet med avhandlingen är att bidra till kunskapsutvecklingen om övergången från vardagsSpråk till specialiserat Språk. Till detta övergripande syfte ser jag tre delmål. Det första och i avhandlingen mest fokuserade handlar om att beskriva abstraktion, och relaterade språkliga drag (grammatisk metafor och teknikalitet), i lärobokstexter från tre skolår (år 5 och 8 i grundskolan och år 2 på gymnasiet) och från tre olika skolämnen (svenska, samhällsorienterande ämnen och naturorienterande ämnen). Mina undersökningar av texternas abstraktion är på en metodologisk nivå försöker att utveckla nya sätt att beskriva abstraktion, både i texten som helhet och när det gäller hur abstraktionen varierar inom texten.

Ett andra delsyfte är att bidra till kunskap om förhållandet mellan författare och läsare i lärobokstexter genom en analys av modus och modalitet.
Avhandlingens tredje delsyfte är att relatera analysen av texterna till den kontext i vilken de använts, det vill säga med de aktiviteter i klassrummen där texterna användes och med de elever som läste texterna.

Teoretiska utgångspunkter

De viktigaste teoretiska utgångspunkterna för arbetet är hämtade från tre teoretiska ramar som alla understryker förhållandet mellan språkanvändning och situationen i vilken språkanvändning äger rum. Utgångspunkterna handlar om: språket som en realisering av den sociala kontexten (ett socialsemiotiskt perspektiv, i synnerhet systemisk-funktionell lingvistik), språket som en del av praktiker (ett socio-kulturellt perspektiv), språket som ideologi (ett kritiskt diskursperspektiv).

Data och metod

De texter som analyseras i avhandlingen har samlats in inom projektet Elevers möte med skolans textvärldar. Ett centralt tema i projektet är skillnader och likheter mellan textkulturer i olika skolämnen. I studien fokuseras texter från svenskämnet, samhällsorienterande ämnen och naturorienterande ämnen. Texterna är i de flesta fall de naturligt förekommande texterna i klasserna. Vi har alltså analyserat de texter som var aktuella under den tid som vi besökte klassen. Förutom lärobokstexter består materialet av eleverskrivna texter, intervjuer om lärobokstexter och eleverskrivna texterna, klassrumsobservationer och lärarintervjuer. Sammanlagt är det ca 150 elever som har observerats och intervjuats angående läsning och skrivning inom det tre olika ämnen. I projektet finns fokus på lågpresterande elever och elever med en flerspråkig bakgrund.

Avhandlingens huvuddata, lärobokstexter, utgörs av sammanlagt 58 texter, 17 från svenskämnet, 21 från samhällsorienterande ämnen och 20 från naturorienterande ämnen. Texterna kommer som tidigare nämnts från de tre olika skolår. Det sammanlagda antalet ord är ca 28 000.

Abstraktion i lärobokstexter

Tidigare forskning beskriver abstraktion i olika typer av texter. I avhandlingen fokuseras på forskning om abstraktion i skolans texter. Här diskuteras både abstraktion i allmänhet och inom olika ämnesområden, framför allt från ett systemiskt-funktionellt perspektiv.

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63 De texter som vi samlade in från undervisningen i svenska är endast berättande texter.
I definitioner av begreppet abstraktion nämns ofta egenskaper som stort betydelseomgång, avsaknad av specifikhet, avsaknad av markörer i tid och rum, ingen möjlighet att vidröra eller se och distans från läsare/författare. Dessa egenskaper hos abstraktion diskuteras i kapitel 4. En viktig del av denna diskussion rör den vanliga sammanblandningen av begreppsparen specifik/generell och konkret/abstrakt. I ett pedagogiskt sammanhang kan generalisering ses som ett övergångssteg mellan konkret och abstrakt. I avhandlingen har jag därför valt att kombinera begreppsparen till en analys av abstraktion i tre kategorier; specifikt, generellt och abstrakt. Ett viktigt drag hos analysen är att den är gjord i sin kontext, det vill säga ord som bedöms som att de refererar till specifika eller generella referenter beroende av deras betydelse i sammanhanget.


Under några timmar av en skoldag möter en elev texter som kan vara mycket olika när det gäller graden av abstraktion. Undersökningarna som presenteras i kapitel 5 visar att texter från olika ämnen uppvisar olika abstraktionsmönster. De skönlitterära texterna från svenskämnet hade i jämförelse med övriga texter, den högsta andelen av specifika referenter och de lägsta andelarna av generella och abstrakta referenter. De samhällsorienterande texterna hade en mindre andel specifika referenter men fler generella och abstrakta referenter. De naturorienterande texterna handlade till en annu lägre grad om specifika referenter, medan i synnerhet andelen generella referenter var hög.

Texternas grad av abstraktion skilde sig inte bara åt mellan olika ämnen utan också mellan olika skolår. Graden av abstraktion är generellt sett högre i texter från senare skolår i alla de undersökta ämnen. Parallellt med denna ökning av texternas abstraktion finns en ökning av graden av grammatsiska metaforer mellan skolår 8 och skolår 5. Ibland beskrivs texter som konkreta eller abstrakta. Intressant att notera är att nästan alla texter hade referenter från alla tre abstraktionskategorier. Specifikhet, generalitet och abstraktion kan därför ses som någonting som texter har i större eller mindre utsträckning, inte som någonting som texter har eller inte har.

Studierna och resultaten från kapitel 5 handlar till en viss del om att belägga någonting förväntat. Detta var nödvändigt att göra eftersom tidigare jämförande undersökningar inom detta fält saknades. Resultaten från kapitel 5 leder dock till vissa frågor: Hur fungerar skiftena mellan olika abstraktionsnivåer? Är det möjligt att relatera abstraktionsmönster till innehållsmönster? I kapitel 6 presenteras undersökningar av dessa frågor. Ett intressant resultat var att de samhällsorienterande texterna, som i jämförelse med övriga texter låg på en mellannivå av abstraktion, hade den största andelen

I kapitel 6 presenteras också en studie av relationen mellan abstraktionsmönster och textinnehåll. Texterna klassificerades i denna studie utifrån sitt mönster av specifika, generella och abstrakta referenter i sex olika abstraktionstyper. Dessa abstraktionstyper analyserades oberoende av de skolår och ämnen som texterna var hämtade från. En analys de dominerande kohesiva kedjorna i texter av olika abstraktionstyper visade att texter som delade abstraktionsmönster också hade drag av innehåll och världsbild gemensamt.

En annan aspekt av utvecklingen mot mer specialiserade texter lyfts fram i kapitel 7. Där presenteras en undersökning av texternas uttryck för auktoritet utifrån deras modus och modalitet. Tidigare forskning visar att läroböcker i jämförelse med andra texttyper presenterar kunskap på ett auktoritär och monologiskt sätt. En metod att undersöka detta är att analysera texternas modus och modalitet. En låg grad av modalitetsuttryck kan ses som ett tecken på de texternas innehåll inte nyanseras utan presenteras som en faktisk sanning. Resultaten från avhandlingens undersökning av modalitet i de svenska lärobokstexterna överensstämmer med tidigare resultat från engelskspråkiga och spanskspråkiga läroböcker. I en jämförelse av graden av modalitet i de svenska lärobokstexterna från olika skolår finns det dock en tendens av ökande modalitet. Detta skulle kunna tolkas som att texter från senare skolår i högre grad presenterar kunskap på ett mindre auktoritär och mer dialogiskt sätt än de tidigare årens texter gör.

I ett sammanhang där läroböckerna presenterar kunskap på ett auktoritär sätt är det av intresse att undersöka om aktiviteterna runt texterna inbjuder eleverna till att diskutera, ifrågasätta och kritiskt granska denna kunskap. Kapitel 8 beskriver textaktiviteterna i undersökningens klassrum utifrån begreppet dialogicitet. I klassrumaktiviteten fokuseras speciellt på hur texterna introduceras, hur eleverna instrueras att läsa texterna och vilken aktivitet som följer upp läsningen av texterna. Resultaten visar att i synnerhet inom de samhällsorienterande och naturorienterande ämnena syftar en majoritet av aktiviteterna i klassrummet till att reproduera kunskap på ett monologiskt sätt, snarare än att producera kunskap dialogiskt.

Kapitel 9 handlar om elevernas läsning av texter med olika grader av abstraktion. Elevernas möjligheter att använda texterna diskuteras i detta kapi-
tel utifrån begreppet textrörlighet. Den allmänna trenden i resultaten är att eleverna visade mindre textrörlighet i texter med högre grad av abstraktion. I kapitel 9 finns också ett försök till syntes av resultaten från tidigare kapitels undersökningar av abstraktion, modalitet, textaktiviteternas dialogicitet och elevernas textrörlighet.

Det avslutande kapitel 10 innehåller en summering av tidigare kapitel samt en diskussion av funktionen med abstraktion i läroböcker. Från pedagogiskt håll framförs ibland en önskan att göra texter så konkreta som möjligt för att inte hindra elevers möjlighet att tillånga sig texternas innehåll. Resultat från tidigare studier och från denna avhandling visar också att elever förefaller ha lättare att ta till sig och komma ihåg mer konkreta texter. Men med en syn på texter som en realisering av en social kontext och abstraktion som en del av specialiserad kunskap så riskerar sådana förenklingar av texter att leda in i en återvändsgränd. Om vi vill att elever ska kunna använda samhällets specialiserade texter är det inte optimalt med lärobokstexter där abstrakt och tekniskt språk systematiskt ersatts av konkret och vardagligt. Sådana texter lämnar elever oförberedda för de texter de behöver kunna hantera i ett samhälle som är beroende av specialiserad kunskap. Ett alternativ till en sådan situation kan istället vara att genom aktiviteter runt texterna stärka mötet mellan eleven och texten.
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Appendix

Description of sources, subject disciplines and titles of the texts in the study

Table 38. Complete description of sources, subject disciplines and titles of the texts in the study. In the table is also information whether the text formed part of occurring classroom activities.

<table>
<thead>
<tr>
<th>Source</th>
<th>Part of occurring text activities (+=yes, - =no)</th>
<th>Subject discipline</th>
<th>Title of the text</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grade 5</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-a-Swe. Lit.</td>
<td>Textbook</td>
<td>+</td>
<td>Swedish</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&quot;The boy and the giant&quot;</td>
</tr>
<tr>
<td>1-a-Soc. Sci.</td>
<td>Textbook</td>
<td>+</td>
<td>Social Science</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&quot;The voyagers of discovery&quot;</td>
</tr>
<tr>
<td>1-a-Nat. Sci.</td>
<td>Textbook</td>
<td>+</td>
<td>Natural Science</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&quot;What is air?&quot;</td>
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