

Discourse Studies and Education

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1. INTRODUCTION

In this paper we will discuss the relevance of discourse studies in education. By 'discourse studies' we refer to the new interdisciplinary field between linguistics, poetics, psychology and the social sciences concerned with the systematic theory and analysis of discourses and their various contexts. This 'interdiscipline' has developed as an extension from rather similar interests and problems in these respective disciplines. In linguistics, thus, it was observed that language use cannot properly be accounted for in terms of isolated sentences alone. In literary scholarship, always having been concerned with literary discourses, more explicit models for discourse structures were required in order to assess specific literary or rhetorical structures in literature. Psychology and artificial intelligence have recently also become interested in the processes underlying discourse production and comprehension.

Sociology has made a great contribution to the study of the structures and strategies of conversation in social interaction, whereas anthropology has a long tradition of discourse analysis in the study of myths, folktales, riddles and other 'ritual' or culture-specific discourse types. Mass communication, finally, involves the important analysis of 'messages' of the media and their influence on the public, a topic shared with social psychology, which is crucially paying attention to processes of belief-, opinion- and attitude-formation and change in communicative contexts.

These are certainly not all the disciplines involved in the study of discourse: theology, psychotherapy, law studies, etc. also have various kinds of discourses as their objects of inquiry. Our point is that the basic similarity between the objects, viz. forms of language use, discourse and their communicative contexts, requires an interdisciplinary approach. Textual structures are in part very general, and so are the principles and processes of their production and reception in the communicative context. Moreover, in order to understand the specificity of various discourse types as they are studied more exclusively in the disciplines mentioned above, a more general understanding of discourse is necessary.

In this paper, then, we would like to discuss a number of points where such an interdisciplinary study of discourse seems to be relevant in education. We will limit ourselves to institutional education in schools and universities. Intuitively speaking, discourses play a primary role in education: most of our learning material consists of texts: manuals, textbooks, instructions, classroom dialogue, etc. Therefore, we first of all should systematically analyze the structures of discourses used in education: style, contents, complexity, etc.

Secondly, it should be assessed how the various uses of such texts influence the *processes* of learning: the acquisition of knowledge, beliefs, opinions, attitudes, abilities, and other cognitive and emotional changes which are the goals of institutional education. Finally, the relationships between textual structures, textual processing and the structures of the socio-cultural *contexts* should be made explicit in such a study: different levels, types of education, social background and cultural variation require different kinds of language use and communicational forms. In our brief survey of the textual aspects of education, we will neglect the other interactional and communicative forms of institutional learning (e.g. visual, manual, bodily, facial learning).

Although we will assume that serious insight into the nature of texts and their contexts might provide some useful suggestions for applications in educational practice in general, and in the study of language and communication at school and universities in particular, we do not want to claim that discourse studies will solve important social problems right away. We would like to avoid the overly optimistic approach in this respect which characterized early generative-transformational and structural linguistics. We only state that since education is predominantly 'textual' more insight into the nature of textual structures and processes is a condition for a better understanding of educational processes.

On the other hand our approach should not only be theoretical or academic. If we know something more or less plausible about texts and learning, and if we have more or less particular conceptions about 'good' educational practices and goals, our application should both try to suggest new ideas and methods and at the same time provide a well-founded and systematic criticism of the texts and dialogues which are current in actual education. This not only holds for the texts which are used, but also for the knowledge and insights taught *about* language and discourse. Traditional schooling primarily has been focussing on grammar on the one hand and literature on the other hand. As if nothing in between, that is, all kinds of other discourse types, language use and communication, should not also be used and analysed.

Our paper will have three parts. First we will briefly summarize some basic results about the structures of discourse, e.g., as obtained in current text grammars. Secondly, we will show how these relate to work in cognitive psychology about reading, comprehension and memory of discourse, and the processes of knowledge and opinion formation. Thirdly, we will try to formulate some consequences for educational texts, practices and goals. It should be stressed, though, that the latter points will be made from the perspective of a linguist interested in education, not from the point of view of a professional educationist.

2. STRUCTURES OF DISCOURSE

Most linguists and most grammars, as we know, have been exclusively concerned with the analysis of isolated sentences. Especially in the last twenty years this study has made considerable progress by the application of systematic and formal models. Yet, both theoretically and especially empirically, this restriction to the sentence boundary has led to several important

problems. First of all, it appeared that many properties of the sentence, not only morphophonological and syntactical, but above all semantic and pragmatic, cannot be adequately accounted for without taking into account structures of other sentences in the discourse or conversation.

Secondly, it was shown that sentence sequences have important linguistic characteristics of their own, such as connection, coherence, topics and changes of topics, turn taking systems in conversation, and so on. Thirdly, it was shown that language use should not only be accounted for in terms of sentences or even in terms of sentence sequences, but also in terms of more embracing units, namely texts or discourses as a whole. And finally, several of the levels and dimensions of discourse analysis do not properly belong to linguistics or grammar, but should be described in terms of theories of narrative, style, conversation, rhetoric, etc. In other words, a more adequate linguistic theory should pertain to sequential and textual structures of utterances, and should be connected with other theories which account for certain properties of discourse and language use. Let us briefly enumerate some of the major results which have been obtained in these different kinds of linguistic and non-linguistic analyses of discourse.¹ We thereby will ignore the extant linguistic insights into the structures of sentences.

2.1. Relative grammaticalness

Sentences are not simply 'grammatical' or 'ungrammatical' per se. They often occur as elements in a sequence, and their grammaticalness may depend on the structures of surrounding sentences. That is, grammaticalness is a relative notion.²

At the phonological level we observe that the assignment of stress and intonation patterns depends on information distribution, topic-comment structures, contrast, etc. between subsequent sentences.

At the syntactic level it has appeared that sentences may be incomplete or semi-grammatical, given parallel syntactic structures in previous sentences. Moreover, phenomena such as pronominalization, the use of articles and demonstratives or other deictic expressions, tenses, modalities, topic and comment function assignment, etc. can be generalized from composite sentences to sequences of sentences.

Grammatical relativity most clearly appears at the semantic level.³ Interpretations of sentences, as was also suggested by certain syntactic structures, will in general depend on interpretations of surrounding, mostly previous, sentences. This will hold for the identification of referents, the precise intensions of predicates, and the assignment of truth, satisfaction or 'facts' in general. Especially the various kinds of modalities of sentences are sequence dependent: the possible worlds with respect to which sentences are interpreted are accessed or 'constructed' often in the preceding context.

2.2. Sequential structures

Besides the relative analysis of sentences in text, the structure of discourse requires explicit description of the structures of sequences of sentences. Similar to the structures of composite (compound or complex) sentences, sequences of sentences have characteristic structures. Some of these have indirectly been mentioned above. In addition we witness, for instance the use

of various kinds of connectives. Thus, we not only have the usual interclausal connectives, such as *and*, *but*, *because*, *although*, etc., but also connectives which may only appear at the beginning of new sentences: *however*, *so*, *consequently*, *yet*, etc. A general semantic theory will have to indicate the precise satisfaction conditions for these connectives.⁴

Work in this area, however, first required an answer to the more fundamental question about the *connection* and the *coherence* (also called the 'cohesion') of sequences of sentences, or sequences of their (underlying) propositions.' Ignoring many complex details here, we may say that the fundamental condition for connection between propositions should be given in terms of the facts denoted by these propositions: if the facts are related the proposition sequence representing them is connected. Relatedness of facts will often be described in terms of conditional relations of various strengths: possibility (enabling), probability and necessity, in both directions (from condition to consequence and the reverse).

Other coherence conditions, holding for whole sequences of propositions, involve relations between possible worlds, discourse referents, and a certain homogeneity of predicates. In many cases this means that propositions must be interpolated by inference from our general world knowledge set, or from our knowledge of the communicative context. At this point the links between a linguistic semantics and a cognitive semantics are most obvious, and we will come back to these below.

2.3. Macrostructures

One of the more interesting features in the semantic analysis of textual sequences was the discovery of semantic macrostructures.⁶ Semantic macrostructures are higher level semantic structures which are derived from the propositional sequences of the text by a number of macrorules. Macrostructures define the intuitive notion of the 'global meaning', 'theme' or 'topic' of a text or of a fragment of the text.⁷ Such meaning structures cannot simply be defined in terms of individual sentential or sequential meanings. They require the application of macrorules which define what is the most 'important', 'prominent' or 'relevant' aspect of a (part of) discourse. The rules, respectively, delete irrelevant (i.e. non-conditional) information, generalize from sequences to one superordinate proposition and construct global propositions from 'normal' conditions, components or consequences (e.g., they derive 'Peter took the train' from 'Peter went to the station. Peter bought a ticket. Peter went to the platform, . . .').

These macropropositions organize the meanings of a text so that we know what the text 'globally' means, what its upshot is. We will see below that this notion is crucial in cognitive information processing of discourse. Macrorules are recursive: they will apply as soon as there is a sequence of propositions which satisfy the respective criteria. From the 'taking a train' example it also appears that macrorules can only apply on the basis of our world knowledge about usual states of affairs and episodes.

2.4. Pragmatic structures

Discourse structures cannot fully be understood at the usual grammatical levels of morphophonology syntax and semantics alone. Above we noticed

that coherence not only requires a ‘meaning’ semantics (intensions), but also a relevance semantics (extension,,). In addition, it should be borne in mind that sentences when uttered in specific social situations may count as speech acts: assertions, promises, threats, etc.⁸ For each speech act we may formulate a number of conditions which define its appropriateness with respect to a given pragmatic context. This context is defined in abstract cognitive and social terms: knowledge, beliefs, preferences, wants, and roles and social relations between speaker and hearer.

Important for our discussion is the fact that both monological and dialogical textual sequences also should be defined at a pragmatic level. That is, they are not only a sequence of sentences but, when uttered, also a sequence of speech acts.⁹ This means, among other things, that again we must look at conditions of connection and coherence. Again it appears that appropriateness is relative: some speech acts are only appropriate given certain previous or following speech acts. The connections are also based on functional and conditional relations between the speech acts: e.g., a speech act may function as an ‘explanation’ of a previous speech act, or as a probable ‘condition’ for a subsequent speech act. More in general, pragmatic coherence requires relations between speech participants, similar contexts, etc.

Similarly, sequences of speech acts are not only connected or coherent at the local level. Just like sequences of propositions, they are organized by (pragmatic) macro structures. By performing a number of speech acts we may at the same time perform higher order, more global speech acts, e.g. when we write a request letter, conduct a conversation in which we accuse somebody, or when we give a lecture. Such a global (macro-) speech act has a global (macro-)proposition as its typical content, which nicely connects the semantic and the pragmatic levels.

2.5. Stylistic and rhetorical structures

Whereas pragmatics relates linguistics to psychology and sociology—being elaborated first of all in philosophy of language—the stylistic and rhetorical structures of discourse also are usually left over for the closely related disciplines of stylistics and rhetoric.¹⁰ Stylistics will be interested in all kinds of variations in language use (very often in syntax and lexicon), depending on the cognitive and social contexts of use. A more general theory of discourse, incorporating both stylistics and rhetoric, will especially try to define the forms and conditions of these variations for given contexts. It will try to show that we also have a stylistic coherence in a text, for instance.

Rhetorical structures, then, are also a specific dimension of discourse: they may occur at all grammatical levels of the discourse. They may be defined in terms of ‘extra’ structures assigned to the basic grammatical structures, for instance in terms of rhetorical transformations: additions (repetitions), deletions, permutations and substitutions. These are well-known and need no further comment here.

2.6. Superstructures

Finally, we would like to distinguish so-called superstructures in discourse.¹¹ These are schema-like global structures. Unlike macrostructures they do not define global content, but rather the global form of a discourse.

This form is defined, as in syntax, in terms of schematic categories. Typical examples of superstructures are narrative structures of a story, or argumentative structures in a proof, demonstration, lecture, text book, argument, etc. Thus, we may have the categories of premises and conclusion as global organizers of argumentation, and setting, complication, resolution, evaluation and moral in a story.

Superstructures organize, because they have a global or over-all nature, only semantic macrostructures: macropropositions fill the slots of a superstructural schema. Or in other words: superstructural categories define the conventional functions of the respective macropropositions. Besides these superstructural functions, we also have other functions holding between propositions or speech acts, both at the micro- and the macrolevel, e.g., the functions of preparation, introduction, specification, contrast, explanation, also briefly mentioned above.¹² Whereas particular types of superstructures, like those of stories and arguments, are relatively well-known, a general theory of superstructures is still in its first stages. We even ignore at present the question whether all discourse types have such a structure.

2.7. *Dialogue and conversation*

The remarks made above about textual structures in principle apply both to monological and to dialogical discourse types. Nevertheless, dialogues have some additional structural properties, as has been exemplified in current work on conversation.¹³ These properties are in part determined by the interactional nature of dialogue discourse. First of all, a text, here, will consist of a sequence of discourse fragments, manifested by several utterances produced by several speakers.

Each contribution of a speaker to the dialogue has been called a *turn*. Turns may follow each other according to specific rules, e.g., for 'giving' or 'taking' turns. Each turn may again consist of one or more speech acts, as they have been described above. Such speech acts may be assigned to certain cognitive or social categories. Thus, a threat may 'express' emotional states of affairs (e.g., anger) or express a social relation (e.g., dominance or power). Besides these structural and categorical analyses of dialogues—to which everyday conversation, meetings, institutional dialogues, etc. belong—we again may have a functional analysis of a dialogical sequence. In social interaction, the characteristic functional category is a *move*. A move defines the functional relation of a speech act or turn with respect to other speech acts or turns, of the same or of the other speaker. A move has a strategic or tactical aspect: it shows how a speech act or turn contributes to local or global goals of speakers. In this way, we may e.g., distinguish between opposing, helping, initiating, terminating, continuing, etc. moves.

An interactional analysis of discourse will not only be concerned with structural or functional properties of dialogues. It will especially have to indicate what the various social contexts of these structures and functions are. Not any conversation can take place in any context. Context types, situations, participants and their various functions (roles, positions, status, etc.) and the rules and conventions regulating their possible actions and speech acts in these contexts must be specified. Again we see that a serious analysis of discourse requires an interdisciplinary approach.

2.8. *Final remarks*

We have briefly summarized the kind of structures we distinguish in an analysis of discourse. In fact, some of the corresponding functions, such as speech acts, also were briefly mentioned. We have seen that whereas some of these structures can simply be described in terms of 'classical' sentence grammars, others require further extension of these grammars. Not only does it appear that grammaticalness is relative with respect to other sentences of a text, but also new notions, such as that of semantic and pragmatic macrostructures have been shown to be required. Moreover, fundamental notions such as local and global coherence at the same time require a knowledge base, just as in the pragmatics we have a number of contextual categories in terms of cognitive and social properties of language users.

We have not covered all the posited structural categories of discourse in this brief review (for example we have not mentioned the 'presentational' and paratextual aspects), but this will have to do for the moment. Our summary not only was meant as a survey of the more important textual structures: levels, categories, dimensions, and their problems and properties, but at the same time as an abstract basis for a cognitive model, which in turn will appear to be the basis for a model of textual use and teaching in educational contexts.

3. A COGNITIVE MODEL OF DISCOURSE PROCESSING

In psychology also there has been increasing attention to discourse.¹⁴ After psycholinguistic studies 'of the cognitive basis of the syntax and semantics of sentences, psychologists and students in the field of artificial intelligence are now studying the underlying processes of discourse production, comprehension and storage in memory. There are fruitful links with the more structural study of discourse in linguistics, poetics and anthropology: analytical models are used in process models, and conversely the process models contribute in significant ways to the structural analysis of discourse.

The psychology of discourse processing has many aspects, of which we will only summarize a few. First of all, we will limit our attention to the *comprehension* side of communication, ignoring the production side nearly completely, because we still know little about the precise properties of production. It may safely be assumed, however, that many of the basic processes which play a role in comprehension also operate in production. Moreover, in a certain sense production and comprehension type processes are often mingled: during production we need to comprehend and represent not only what we have said ourselves, but also all the properties of the communicative context, whereas in comprehension many 'active' or 'productive' operations will appear to play a role. Similarly, we will at first abstract from personal variation in discourse comprehension, from problems of development of discourse rules, and from pathological aspects of discourse use.

We will focus attention on three major problems of discourse processing, which are at the same time the respective phases of the comprehension process:

- (i) Comprehension of sequences in short term memory (STM)
- (ii) Representation of discourse as episodic information in long term memory (LTM)
- (iii) Retrieval and reproduction of discourse information

More specific educational problems, e.g. knowledge acquisition from discourse, will be discussed in the next section.

In discourse comprehension, just as in sentence comprehension, language users will predominantly be focussing on semantic information. That is, surface structure information will be 'translated' as soon as possible into meaningful information, in terms of proposition sequences. This interpretive process basically takes place in STM. It will also be the semantic information which will, in principle, be stored retrievably in memory: precise surface structures will be soon forgotten. Hence, the model will predominantly operate with propositional structures.

A first cognitive constraint lies in the limited capacity of STM : its buffer will be able to contain only a few semantic information chunks. Since discourse consists of connected sentence sequences, however, and since in comprehension propositional sequences therefore must be interpretatively connected, there must be processes and strategies which allow this to be done in STM. This means, first of all that propositions must be organized in more complex cognitive units.

Sentences may express sometimes up to 20 propositions of the form: *girl(a)*, *boy(b)*, *loves(a, b)*, etc. We will assume that these propositions are further organized in so-called FACTS.¹⁵ Such FACTS are cognitive representations of the 'facts' which we identify and isolate in perception and comprehension of the world. A FACT consists of a schematic structure of an Event, Action, Process or State, together with a number of Participants having the usual 'case' roles: Agent, Patient, Instrument, etc., the whole being localized in some possible world, time and place.

Cognitive FACTS will, roughly speaking, be expressed by clauses or simple sentences. In order to connect clauses or sentences, language users will first construct propositions, organize these in FACTS and connect the respective FACTS. We assume that the semantic chunks in the STM-buffer are precisely these FACTS. In order to be able to connect sentences a few of these FACTS will be sufficient for handling in working memory. However, sequences of sentences need more than pairwise connection assignments. This means that the STM-buffer must regularly receive and yield semantic information. In other words: local discourse comprehension is a cyclical process: some FACTS will remain, some 'old' FACTS will be stored in LTM, and some 'new' FACTS will be introduced into the STM-buffer in order to be connected with the FACTS which are there, and so on through the whole discourse.

We have seen in the structural model above that this establishment of local connection and coherence requires world knowledge. We therefore must assume that language users will activate more general knowledge from LTM (semantic memory) in order to supply normal 'missing links', namely those propositions or FACTS which are not expressed by the discourse because they are supposed by the speaker to be known or inferable by the hearer (which is a well-known pragmatic criterion of appropriate speech acts). Below we will see that part of this conceptual world knowledge is further organized in frames and/or scripts. For the processing model this means that the STM-buffer momentarily not only contains some FACTS as interpreted from the discourse, but also one or two propositions or FACTS from semantic memory. Comprehension of sentences and sentence connection however is not

enough. Already in the structural model we have seen that discourses also have global meanings, that is, themes, topics, gists or upshots, which we have made explicit in terms of macrostructures.¹⁶ And indeed, when reading a passage, a language user also needs to know what it is about, globally speaking. It is not possible to fully understand sentences or to establish local coherence relations without establishing, at least hypothetically—because reading is linear—a global meaning or topic for the whole passage: the connection between ‘Peter went to the station’ and ‘Peter bought a ticket’ is meaningful under the global proposition ‘Peter took the train’, whereas ‘Peter took a bath’ cannot coherently follow the first sentence because there is no global action or event in which these respective facts are related. Now, we will assume that a macroproposition or a MACROFACT will be added, provisionally, to the STM-buffer, namely as a global interpretation basis for the local connections of the sentence sequence. This global proposition will remain there as long as the passage is about the same topic. After topic change, the proposition will also be sent to LTM and substituted by another macroproposition, and so on through the whole discourse, and for the different macrolevels of the discourse.

Macrostructures are constructed by the application of the cognitive correlates of the macrorules discussed above: the language user will make semantic inferences, during which irrelevant detail will be deleted or relevant detail selected, he will apply generalizations and construct global ‘new’ propositions from component events.

The cognitive function of macrostructures is essential in the processing of complex information. Without them, a language user would be unable to establish coherence in a sequence of several sentences, he would be unable to infer global themes or topic, he would be unable to further organize and reduce complex propositional structures to more manageable chunks and more structured representations of the discourse in memory, as we will see below.

Something similar happens in the understanding of superstructures.¹⁷ In order to know that a text is a story, a language user will try to map the macropropositions into a superstructural schema of a narrative. Or conversely, if he already knows or assumes that it is a story, he will search for the relevant semantic fillings of the schematic slots. The conventional schematic categories and structures, together with possible transformations, will be drawn from semantic memory. Hence processing of superstructures will be both bottom-up and top-down.

We ignore how precisely rhetorical and stylistic structures are perceived, understood and represented in STM and LTM. We may only assume that they will further assign structure to the organization of the text, although often only at the local level.

The assumptions made above about the processes of local and global discourse comprehension have their consequences for the episodic *representation* of the discourse in LTM: the representation will be predominantly semantic, and the organization of the representation will be a function of the structures assigned to it during comprehension in STM. In other words, the memory representation will consist of a hierarchical structure, with high level macropropositions, and low-level micropropositions which are organized in

FACTS which are locally connected (e.g., by conditional relations and by referential identity). The macropropositions, at least those of a rather high level, will further be organized by the schematic categories of the superstructure, e.g., that of a narrative.

A similar story holds for *retrieval* and *reproduction*. Experiments have shown that especially semantic information can be recalled or recognized, and that recall is better if the sentences are connected. More particularly, recall is better if the text has a global meaning: recall protocols, especially after some weeks, will predominantly feature macropropositions. We indeed best remember the upshot and not the details of what was read. Retrieval processes in general, then, seem to follow the structure of comprehension and representation, but below we will see that they also depend on the context of (re-)production.

The model of discourse comprehension sketched briefly above is, as we said, a model about comprehension in vacuo. Of course, natural discourse comprehension is more complex and requires an account of further factors. What we have abstracted from, for instance, are differences in the knowledge of the language users. We may assume that, since knowledge is so important in discourse understanding, a language user who has more or better organized knowledge of a topic will in general better understand a text, e.g. by constructing a better and more 'deeply' organized discourse representation in memory, with more links with his general or episodic knowledge.

The same, however, will hold for his opinions, attitudes, interests, norms and values at the moment of reading the text. Both at the local and at the global level, interpretation will be monitored by these factors of the so-called cognitive set of the language user.⁸ Connections, topics, biases, or attention, will change as a function of information from this cognitive set, as we well know from social psychology. Thus, language users may neglect information which does not fit in with their knowledge, opinions and attitudes, or will pay extra attention to the information which is part of their actual interest and topics.

The same holds for the more specific contextual goals, tasks, wishes, etc., of language users. These may determine that the same discourse will be assigned different themes (important information) in different contexts, at different times, by the same readers or by different readers. Conversely, the textual representation in memory will obtain more or better organization by these various links with existing systems of knowledge, opinions, attitudes, goals, tasks, wishes, etc.

The same will of course hold in retrieval and reproduction. In other words, not only memory but especially (re-)production will be functional: it will depend on the reader's assumptions about the demands of the context, his goals of discourse (re-)production, his evaluation of the importance of information to be reproduced, etc. and in general on the pragmatic and social contexts of (re-)production. Well-known too is the fact that retrieval and reproduction therefore has a (re-)constructive nature. We will not always be able to retrieve actual details, but we will often have to infer them from better available information, e.g., semantic macrostructures. In that case, the macrorules may be applied conversely: addition, particularization and specification of normal consequences, components or conditions. Or general opinions or attitudes will direct the search among the (macro-)propositions

and (re-)construct what was probably read. Details both of retrieval and production processes of this kind are still unknown.

Finally, it should be stressed that cognitive sets, just like long-term memory in general, must be effectively organized. It would be impossible to search appropriate information or to make the necessary inferences during discourse comprehension if the information needed for these cognitive processes would be stored in random order or simply by order of input. In general we may say, rather roughly, that conceptual information is organized in semantic clusters. More particularly such clusters will often have a hierarchical nature: higher level concepts dominate more specific concepts.

Due to personal, pragmatic and social constraints, however, additional, sometimes redundant, structuring is possible. Interesting for discourse comprehension is the important assumption that our knowledge about frequently occurring, conventional episodes is organized in prototypical units, which are called *frames or scripts*.¹⁹ The complex sequence of actions and circumstances which make up eating in a restaurant, taking a bus, giving a dinner party, etc. are thus cognitively represented in our knowledge as frames or scripts. These allow us to effectively take part in, understand and control such stereotypical interaction sequences, also when represented in a story for instance. We may assume that opinions and other cognitive factors are organized in similar ways, such that attitudes are the complex, higher-order frames which organize opinions and actions concerning particular socially relevant issues.

4. DISCOURSE AND DISCOURSE ANALYSIS IN EDUCATIONAL CONTEXTS

After this theoretical introduction about the structures and comprehension of discourse, we are now able to specify the role of discourse and discourse analysis in educational contexts. Our remarks about this topic will be fragmentary and sketchy, and made from the point of view of the linguist and psychologist of discourse, as we remarked earlier. We will try however to establish a systematic _ framework in which such a complex topic may be further studied.

We will, therefore, distinguish, different areas of research as follows:

1. Various processes of didactic/pedagogical interaction: teaching monologues and dialogues, speech interaction between students, etc. in the classroom;
2. Uses of textual materials in the educational interaction: textbooks, stories and other reading material.
3. Teaching intuitive or more explicit knowledge, understanding, insight, conscious use, of textual communicative forms;
4. Teaching systematic analysis and theory formation about 3 (and sometimes also about 1 and 2)

Clearly, in an important social domain such as education, analysis and theory formation is not sufficient. We should derive and formulate principles and goals, and critically evaluate existing educational practice on that basis. Similarly, we should develop new methods, contents, textbooks, and other materials and practices which better realize our educational goals.

4.1. *Classroom interaction*

The study of classroom interaction, and the analysis of didactic dialogue in particular, have received much attention in the last few years.²⁰ So, little need to be said about them here. Work in this area has been focussing on speech act sequencing and categorization and interactional moves in instructional dialogue between teachers and pupils. It has been shown that certain speech acts of teachers and pupils are to be understood in the perspective of the relevant properties of the social context: the institution defines who gives information, asks for information, gives advice, threatens, and so on.²¹

Only more recently there have been changes in these typical conditions of dominance and power in the didactic context. For the analysis this would first of all mean that interactions between pupils should also be analysed in didactic terms, or that current practices are critically examined and suggestions are made for other ways of instructional cooperation. This holds not only for elementary schooling, but in particular for secondary and higher education, which have been studied much less systematically from this perspective.

Besides this critical analysis of the institutional context and its influence on the possible acts, speech acts and transaction of the participants, a cognitive analysis is necessary. It should be assessed in which respect the various speech acts and their semantic contents can be understood, represented and stored adequately in memory by the pupils. Testing or providing individual knowledge items, as we will see in more detail below, is not a sufficient condition for the integration and organization of knowledge which is the basis for insight and for the relevant use of knowledge in later situations. In other words, the cognitive processes involved in learning will have to influence the choice, sequencing and communicative situations of speech acts and moves.

For instance, if we want to bring about knowledge about history, geography, or various sciences, it would not simply be adequate to make a number of statements and control for local learning by questioning. For the necessary integration and organization, the interaction should be geared towards an inquiry into existing knowledge, and towards the actualization or establishment of the required motivations, interests, beliefs, opinions and goals of the pupils. This may mean that the information is acquired during task execution and problem solving in real or simulated situations in which the pupils themselves arrive at such motivations and other learning conditions. Similarly, it may be necessary to attach the information to episodically salient discourses such as interesting stories. Clearly, this calls for a large variety of speech acts and transaction types. In other words, the semantics and pragmatics of instructional dialogue should be closely interacting with the cognitive processing and results which are our educational goals: what goes on in the classroom should not be analysed in isolation from what goes on in the heads of teachers and pupils.

Against this general background, we may add some remarks about the didactic dialogue itself. We have seen that sequences of speech acts, and also sequences of moves and transactions, are not only locally coherent. Participation and understanding in such dialogues also requires global coherence. This means, among other things, that there must be clear plans, underlying purposes, regarding global results and goals of a particular sequence (lesson or part of a lesson). At the pragmatic level, such coherence pertains to the global

speech acts being carried out: assertion, question, advice, etc. The pupil must know what the interactional 'point' of the teacher is. At the semantic level too he must know what the teacher is driving at, namely what the global theme or topic is, what the upshot is of the various informations, what is important and what is less important detail.

As we will see below for textbooks and other textual material as well, this implies that the subsequent speech acts of the teacher must express, signal or indicate in a clear way how this global pragmatic and semantic coherence must be established: introductions and summaries must be given, thematic words and sentences must be emphasized, e.g. by repetition or question-answering tests, schemata must be drawn on the blackboard or other sustaining visual information given about the major points, and so on. Too much detail, digression, complex ordering, and other properties of the dialogue may make it impossible for the pupil to grasp the more important points; his cognitive representation of the dialogue will be ill-structured, due to an absence of macro structures, schematic structures or functional relationships between propositions.

Of course, the basic cognitive skills will change during development, so that pupils at higher stages will be able to understand the semantic and pragmatic topics within more complex or detailed classroom dialogues. It should however be stressed that even in higher education, students have very serious difficulties in constructing macrostructures for rather complex instructional texts and dialogues. It is at this point, therefore, that our educational strategies need serious attention and development of new didactic methods of interaction and comprehension.

4.2. Reading and comprehension

One of the most serious textual problems in education, and not only at the initial levels, is that of reading' /listening and comprehension of the various discourse materials used in the classroom. Whereas pupils in their pre-school years have acquired the ability to understand much of what is said to them, their first problems will arise with basic reading, and later they will be confronted with the comprehension—and its associated tasks—of increasingly more complex types of spoken or written discourse types. Little is understood at the moment about the nature of the problems involved. We may however assume that our growing insight into the processes of discourse comprehension will also shed light on developmental and educational aspects.

Most research on basic reading has focussed on the processes of letter and word identification, their mutual interaction and the interaction with syntax and lexical sentential semantics.²² It has been shown, among other things, that reading not merely involves elementary letter and word identification. Word identification and comprehension are processes intimately connected with syntactic and semantic knowledge and expectations. It seems obvious, therefore, to assume that word and sentence comprehension are in turn dependent on knowledge and expectations about sentence relations and discourse structures. In this respect it should first be noted that cognitive skills for discourse comprehension are already acquired, partially, in the pre-school period.²³ Children have been confronted with everyday stories from parents and friends and have been told children's stories from books. Simi-

larly, other elementary discourse types have been learned in communication. This means that basic aspects of coherence have been mastered, such as conditional relations between propositions, e.g., cause and consequence, temporal relations, etc., and identity of discourse referents through texts. Hence, in more advanced elementary reading of stories, for instance, they should learn to actualize their extant abilities in the comprehension of text.

However, discourse comprehension raises a number of initial obstacles which should be overcome. First of all, it may be the case that certain written texts are not redundantly coherent, due to the fact that usual knowledge propositions, needed to establish local coherence, are not expressed. Secondly, global coherence should be established as well, and it may be asked how far the ability to construct macrostructures has been learned by the age of six. We may test global comprehension with questions about the topic or theme or to 'tell the most important events' of the story or simply to ask to retell the story. A measure for global comprehension may be derived from the results of these tasks. However, the problem then is that at the same time we are testing a production skill, the skill of telling a story, for instance. But coherence production need not develop at the same time as coherence understanding.

Similarly, (re-)production, as we have seen above, also depends on factors of the cognitive set, and also about the demands of the reproduction context. Knowledge in the younger pupil with respect to both may be quite different from that of adults. The essential importance or relevance criterion in the establishment of global coherence requires much world knowledge, a certain perspective, certain interests, and so on, and these will be different for the six year old: what we consider to be details may be crucial events for him/her. Reproduction of a story, or similar tasks such as question answering, may thus yield apparently 'incoherent' responses. This would be a situation which could be characterized as the 'differential' coherence hypothesis: children may very well globally understand a discourse, but at least sometimes in a way different from the way we understand. The opposite hypothesis would be the 'lack of global coherence' hypothesis, being confirmed by any serious test which would show global inferences about themes of a text.

At this point, we assume that both hypotheses share part of the truth. That is, children will indeed often assign their own macrostructures, but at the same time it may be that their understanding is only local. In the latter case they just understand sentences and sentence connections, perhaps with some elementary construction of theme at a low level, but the further derivation of higher order themes for the whole text, and hence the construction of an adequate text representation in memory may initially be only fragmentary. Apart from the well-known production bias, signalled above, the test would consist primarily of reproductions of stories, or stories about personal events. Appropriate summaries of complex information of this kind will sometimes be mastered only around the age of eight, depending on various factors, such as practising at home, and its socio-cultural conditions, and personal differences of intelligence, cognitive set, and so on. It should be recalled that in the latter case the relevance criteria may be different for different children from different social backgrounds.

What has been said for macrostructures also holds for superstructures.²⁴ Stories are familiar as stories, so narrative superstructures should be acquired

early: if we tell half of a story, a child will soon ask us ‘What happened then?’ (resolution), or ‘How did it end?’ (evaluation, moral). Adequate production of story schemata may again come much later; if only microstructures, i.e., lower-level details, are produced, no story schema can be available to organize macrostructural content.

Both thematic and schematic global understanding will of course determine the comprehension of the local level, since comprehension is, as we saw, both top-down and bottom-up during processing. If no theme can be established, not all local connections can be appropriately interpreted. Part of the job may be taken over by the actualization of knowledge frames scripts: if a reader knows how a stereotypical episode normally occurs, then also the comprehension of a text representing the episode will be easier, and the same holds for the establishment of the global theme, derived from the higher level concept of the frame or script: ‘This is about going to the zoo’, ‘This is about going to the beach’ or ‘This is about going to visit an aunt’. Still, many children’s stories are simply not about such episodes, but feature all kinds of fantastic adventures which require partly independent theme construction. Research will be necessary to establish what kinds of semantic contents of discourse require how much global processing, and at what age these processes are acquired.

Reading instruction at this level would consist in giving previous summaries, providing adequate titles, having many expressions of global characteristics, e.g., plans and goals, key words, thematic sentences, asking questions about major events and actions, or having stories reproduced, told, summarized.

At higher educational levels these problems will repeat themselves as soon as other discourse types become involved in the classroom. First of all, of course, the textbooks, to which we will return below. Then, the pupil will be confronted with more abstract, descriptive, argumentative discourses, such as newspaper texts and, later, philosophical essays, or complex literary narrative and technical discourse. Since the elementary conditional relations of cause and consequence and temporal succession may be nearly absent here, other types of local coherence must be learned, e.g., reasons and conclusions, backing of arguments, and so on. At the same time the knowledge, opinion, attitude, value and norm sets should be ‘updated’ in order to understand such texts, which may increasingly rely on background information about the topic. Other schemata, for example that of argumentation, must be acquired, and related to cues in the text.

As far as we know, systematic teaching at this level is as yet rather underdeveloped: it will mostly be shown ‘intuitively’ how it is done, how important and less important aspects are distinguished, what the line of an argument is, what knowledge is involved, etc. Instruction at this level, then, would require signalling of typical connection conditions, making abstracts, giving titles, specifying own evaluations, making schemata, and so on, depending on theoretical insights about the characteristic structures of such discourse types.

4.3. Textbooks and other textual learning material

Closely related to what has been remarked about reading and comprehension in general, is the problem of reading, understanding and learning of

textbooks and other textual learning materials.²⁵ The difference lies in the goals of the communicative process involved. Not only should the texts be understood, but also at least some of their contents must be memorized or learned. This requires both local and global understanding, an adequate representation in memory and the establishment of links with the knowledge system in a more general way. Again learning from text and learning about the world will be parallel in these cases.

In order to understand textbooks about geography, history, biology, etc., world knowledge is both needed as a basis and at the same time requires extension and modification. The reader must discover the dependence of various geographical conditions on economical and political factors, the relations between historical events, or the physical characteristics of plants, animals and men. But again, this is possible only when distinctions are made between what is important and what is only detail, which conditions are crucial, how causal or argumentative relationships play a role. For these structural properties in our knowledge about the world the text will need to establish the basis, together with visual and sometimes auditory information.

On more or less intuitive grounds textbooks have been written in order to provide an adequate basis for appropriate knowledge acquisition: important words and passages are signalled in different ways (italics, repetition, boxing, etc.), summaries are provided, relevant questions are asked, for example in programmed courses, visual schemata are drawn,²⁶ and so on. Yet, our insight into the precise conditions and factors in textbook reading, understanding, representation and resulting knowledge, opinion and attitude changes, is as yet only fragmentary. Apart from the enormous problem of personal and socio-cultural variations among the pupils, we even ignore the more general conditions of textbook learning. At what point are pupils able to make the correct inferences, to actualize relevant previous knowledge, to make necessary generalizations, are to derive details from global information, for example in (re-)production, etc.?

These and many other problems cannot be answered here: they are questions which need to generate future theoretical and experimental research.²⁷ From our modest insight into knowledge formation processes on the basis of text comprehension, we might only repeat that (i) the structural connections, local coherence, missing propositions, global content and schemata should be made explicit or signalled in different ways, and (ii) that links should be established systematically with previous knowledge and actual interests, beliefs, opinions, or other cognitive information which may episodically and more generally bind the information from the text. We should realize that text understanding and short range reproduction is one thing and long term learning quite another thing. The latter requires many structural links, both with episodic experience and above all with semantic knowledge, so that in later use retrieval remains possible. Practising the concrete application of the knowledge in simulated or realistic contexts will be one of the necessary conditions for effective search of information in retrieval: strategies are learned to find the information quickly, rules of generalizing or particularizing inference are learned and practised, and the relations between knowledge and the properties of the 'application' context are better understood. This latter point means for instance that pupils will learn to know when and how the information learned will be needed.

The moral of these, admittedly general and sometimes vague or speculative, marks is that if these conditions are not satisfied, most of the textbook formation will be no longer accessible, so that there is little reason for reading textbooks in the first place. In spite of the large number of textbooks which dominate all the stages of our educational system until the university, it apparently has hardly been realized what the conditions of this complex learning are, and how they could be respected in the textbooks.

4.4. *Teaching discourse and communication*

First language learning at school traditionally focussed on elementary grammar and reading a few discourse types, e.g. stories, on the one hand, and spelling and simple writing tasks on the other hand. More recently, attempts have been made to extend this program towards a more adequate curriculum involving all kinds of language use, texts and communication.²⁸ It was recognized that the pupil, at all stages of primary and secondary school needs practical communicative skills which are functional with respect to his personal and social communicative needs.

Depending on the age level this means for instance that not only receptive language abilities should be trained, but also productive ones (narration, composition, essays, etc.), that texts are learned to be used in a variety of social contexts, involving not only grammatical correctness, but also stylistic, schematic and rhetorical effectiveness. Similarly, not only stories, and later literature, but also newspaper texts, TV programs, films, advertisements, propaganda, comics, and so on need to be read and understood. In other words, the pupil should acquire a full range of communicative skills. Few textbooks, however, are as yet available for a systematic training of this kind of communicative competence. And, as we will see below, teachers have hardly been trained to set up adequate curricula for this broad kind of language, discourse and communication teaching.

In order to abbreviate our discussion about this central issue in textual education, we will give a rough systematic sketch of the various discourse types which at the respective stages should be used, and of the major properties which should be paid attention to, tested, controlled and explained.

SOME DISCOURSE TYPES

Conversation	Diaries
Interviews	Letters
Meetings	
Dramatic dialogues	Political discourse
	Propaganda
Stories	
natural (everyday)	Discussions
artificial (literature)	Public addresses
Poetry	
Songs	Laws
	Contracts
Newspaper news	Public notices
Advertisements	
News comments	Manuals
Public letters	Textbooks
	Lectures

(continued)

Radio and television stories, drama shows interviews news, reports lectures advertisements	Reports, papers Instructions
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This list is obviously not complete. It shows, though, the variety of discourse types which are or will be relevant for the pupil, both at school and in the personal and social context. Most of the text types may further vary in content and style. Also they will need different kinds of attention, depending on age level. Whereas stories, drama, songs, wordplay, comics, diaries and letters, will dominate in primary school, more complex text forms will be used in secondary school, particularly in the higher grades.

The reasons for this type of intuitive training in various communicative skills have been summarized above. The pupil must be able to participate adequately in a meeting, be able to write a letter of complaint, to hold a discussion with others, to understand newspaper and television news and advertisements, and to write some of these discourse types himself.

The various properties which should be paid attention to in the use of such discourse types are for instance the following:

PROPERTIES OF DISCOURSE

A. *Context of use*

1. In which culture is the text used'?
2. From what historical period is the text?
3. In what typical social situation is or can it be used?
4. What category of speaker has or may have produced it?
5. What category of hearer;public is it addressed to?
6. What are the purposes, intentions, interests of the speaker/writer?

B. *Grammatical structures*

1. Is the text in standard language or some regional or social dialect?
2. Are the pronunciation and the syntax according to the norms of language or dialect?
3. What kind of grammatical deviations occur, if any?
4. What are the semantic connections between sentences?
5. What other coherence relations are exhibited at the local level (e.g. pronouns, demonstratives, articles)?
6. What are the themes, topics or global ideas of the text, and how are these expressed in titles, words, sentences?
7. What speech acts are being performed?
8. Is there a global speech act being performed?

C. *Other discourse structures*

1. What kind of superstructure has the text, e.g., narrative or argumentative structure, and how is this structure organized and signalled in the text?
2. What kinds of stylistic structures characterize the text:
pronunciation
lexical choice, register
syntactic length, complexity of sentences
semantic coherence, completeness, etc.?

3. What kind of rhetorical operations are being used, e.g. morphophonological, syntactic or semantic operations of repetition, deletion, substitution (rhyme, alliteration, metaphor, exaggeration, repetition, etc.)?

D. *Interactional properties*

1. Who is speaking to whom?
2. Who takes, gives or keeps turns'?
3. Which strategic moves are made by the speaker to reach his goals?
4. What social acts are implied by the speech acts and moves of the speaker (helping, opposing, etc.)?
5. What role and status differences are exhibited in the utterances and in the interactions? (see also A.)

E. *Presentation performance*

1. What are the writing or sound features: loudness, pitch, 'warmth' etc.')
2. What facial work, gestures, head position, closeness characterize the speaker and hearer?
3. What other acts are performed as paratextual properties: laughing, looking angry or relieved, and so on?

Again we are not complete, nor explicit. In order to avoid misunderstanding, it should be realized that the various discourse properties, especially in the lower grades and in primary school, are not taught in the theoretical terms used above, but in more intuitive terms. Nor need a pupil systematically master all these properties at the beginning. Relevant text types should be selected or produced at each age level, and some of the *typical* properties should be shown, explained and discussed.

4.5. *The analysis of discourse and communication*

Clearly, the primary aim of language and discourse teaching at the lower levels must be that various types of texts and communicative interactions can be appropriately and effectively used by the pupil in natural social contexts. Such teaching will gradually involve explanations about various properties of discourse and language use, first in more or less intuitive terms, later in more precise terms. At the secondary level and in higher education, however, this understanding of language use will also need a more active and reflexive component: the student must be able to describe his comprehension of the text, and to analyse the text and its context. In other words, besides the usual forms of grammar at school, we need instruction in the theory and analysis of discourse and communication. Eventually, the student himself must be able to provide the answers about textual properties mentioned in the list of questions given above: language and discourse become the object of analysis, criticism; and the resulting knowledge, insights or skills become available for practical application in language and communication projects.

Although we have refrained from making suggestions in this paper about concrete teaching methods, didactic strategies or similar important aspects of teaching, it should be recommended that theory and analysis are integrated into the actual goals of language use and communication: use and analysis of more complex discourse types may go hand in hand, in simulation games or projects about particular communicative media (e.g., newspapers or television,

communicative topics (e.g., everyday conversation), or other thematic projects.

Instead of learning a great number of unrelated details about discourse types, the language curriculum should focus on elementary and coherent insights and analytic skills. Thus, in the final grades of secondary schools and in university, the student should at least be able to distinguish and study the following types of characteristics of discourse and communication:

- a. Discourses and their properties are interrelated with socio-cultural and historical contexts
- b. Discourses are used as speech acts, social acts, and will involve moves in a context of strategic interaction
- c. Discourse types are linked with specific social context types, situations or circumstances, involving participants with specific roles, status, function, and being controlled by rules and conventions
- d. Discourses will exhibit the intentions, wishes, preferences, interests and goals, of speakers
- e. Discourse structures may be studied at several levels: morphophonology, syntax, semantics.
- f. The various levels may have various dimensions of style, determined by personal and social context, perspective, etc.
- g. Various rhetorical operations may enhance the effectiveness of the discourse
- h. Discourses will be performed within the more complex framework of non-verbal or paratextual communication.

These major characteristics may be summarized with the statement that text structures and context structures are to be linked in a systematic way, as is also the case in actual language use in a more intuitive manner. The various points made above are at the same time the central aims of a study of discourse and communication within a long-range language curriculum. How these insights and analytic skills are developed is a practical and experimental problem which needs to be studied in the near future.

Whereas in secondary schools these aims can only be programmed in a rather simple way, university curricula should progressively focus on the systematic and explicit analysis of the major properties of discourse in communication. In fact, most of the properties mentioned above still require empirical and theoretical research. Results of this research, as it has been summarized in the first part of this paper, should in turn be able to provide a theoretical basis for more applied insight into educational aspects of discourse.

It may be clear, in that case, that grammar, speech, essay writing, composition, and their analysis, should be integrated within a more comprehensive university curriculum of language, discourse and communication studies. We have shown that many grammatical properties must be treated in text- and context-sensitive descriptions and, vice versa, that language use and discourse analysis cannot seriously be undertaken without explicit grammars. This kind of integration would of course also involve literary studies. The sometimes strict separation between the language/ linguistics and literary sections of departments, characterizing universities in many countries, is artificial and

counter-productive for various reasons. Both linguists and literary scholars should be acquainted with properties of language use, discourse and communication, which at the same time provide the 'missing link' between the two disciplines.

Students of literature should be aware of the fact that literature is a type of language use, and that a more general insight into language use and discourse provides the only serious basis for a more specific analysis of literary discourse structures and of aspects of literary communication. A concrete consequence of such an insight would be a change of emphasis in the curriculum towards the more general study of discourse. This would only apparently leave less space for literature proper, because most of the structural and contextual properties which are now studied in literature courses also hold for other kinds of discourse (e.g., advertisements, songs, natural stories, historical documents, etc.). Integration of the curriculum would at the same time provide the necessary conditions for the integration of our insight into literature, discourse, language use and communication. We have seen earlier that such an enhanced coherence of our knowledge is an indispensable condition for useful long-term learning.

5. CONCLUSIONS

In this paper we have investigated the possible application of discourse studies in the field of education. On the whole our argument has been informal and at some points also speculative or programmatic. The perspective of the discussion has been that of the text linguist, so that the treatment of educational problems has remained strictly non-professional. The global set-up of this paper began with a brief summary of results from text grammar and discourse studies in general, then reported some major insights about the cognitive processing of discourse which should be an important component in the basic theory of language teaching.

It was argued that texts should be analysed at various levels. The semantic level especially requires particular attention. Conditions of local and global coherence of texts were specified, the latter being made explicit in terms of semantic macrostructures, which define the notion of 'theme' or 'topic'. Similarly, stylistic and rhetorical analysis should take place at the discourse level as well. Related to the semantic macrostructures we also distinguished schematic superstructures which define conventional and categorical 'formal' parts of a discourse type, e.g., a story. Finally, a discourse was taken as a sequence of speech acts, which also need to be locally and globally coherent, so that pragmatic macrostructures were postulated. This means that a discourse, both as a monologue or as a dialogue, not only has various structures, but also may have several kinds of functions. Besides the speech act function of utterances, we therefore also distinguish turns, moves, and interactions in sequences of utterances.

Discourses appear to require also an analysis of their various contexts. The socio-cultural contexts for instance must be specified in order to understand the interactional nature of dialogues. The cognitive context is characterized in terms of the processes and representations of the comprehension procedures in short and long term memory. These processes on the one hand depend on the

structures assigned to the text, where macrostructures play an important role, and on the other hand upon the various factors of the cognitive set of language users, e.g., their knowledge, beliefs, opinions, interests, norms and values. The role of knowledge, for example as it is organized in frames or scripts, has been emphasized as an important component in discourse comprehension. Some of the conditions were briefly reviewed which determine storage and retrieval of textual information, and hence learning.

The application of these results in education was given for only some areas of language education: communicative class interaction, reading and comprehension, the structure of textbooks and other textual materials, the teaching of a wide variety of discourse and communication skills, and finally the teaching of discourse analysis itself, especially at higher levels.

The general conclusion from this discussion^o-has been that classroom interaction, reading, understanding and language use should respect the cognitive aspects of discourse comprehension and learning from discourse, which in turn, as we saw above, depends also on the various structures of discourse. It was argued that pupils and students should be systematically confronted with a great number of different discourse types which are relevant in their personal and social contexts. They should learn to use and understand these, paying attention, at first intuitively and later more explicitly, to a number of crucial properties of these texts and their typical pragmatic and social contexts. In discourse analysis they should learn to make this understanding and use more explicit, e.g. by making distinctions between levels of discourse, and by linking textual structures with contextual structures.

Finally the planners of university programs were urged to integrate grammar language and literature studies via a more general study of language use, discourse and communication. In this way only, teachers can be trained who are able to work within the complex curricula suggested, and methods, textbooks, etc. can be developed which are the basis of this kind of language teaching.

(Received May 1980)

NOTES

¹ Work in text grammar and the more general study of discourse has been so extensive in the last ten years that full references cannot possibly be given in this paper. We will, rather selectively, only mention some relevant studies on the various issues mentioned below. or refer to other work of our own. For more general surveys on text grammar, see e.g., van Dijk (1972), Petöfi and Rieser (eds.) (1973), Grimes (1975), Dressler (ed.) (1977, 1978), Halliday and Hasan (1977), Petöfi (ed.) (1979) and Dressler and de Beaugrande (1979). In these books many further references may be found.

² For an analysis of relative grammaticalness, see e.g. van Dijk (1972), Halliday & Hasan (1977), Werlich (1976) and the papers collected in Petöfi (ed.) (1979).

³ Semantic relativity has been discussed in Lakoff (1971), van Dijk (1972) and especially in van Dijk (1977a).

⁴ See van Dijk (1977a) for a study of sentential connectives.

⁵ We take 'coherence' and 'cohesion' as synonyms here. Connection is taken as a particular case of coherence, viz, the semantic relation between whole sentences or propositions as they follow each other in texts (Cf. van Dijk, 1977a). See also Halliday & Hasan (1977).

⁶ Within textlinguistic work macrostructures have often been neglected: attention has mostly

been paid to the more 'local' connection and coherence conditions relating sentences in (textual) sequences. The linguistic aspects of macrostructures have been studied in van Dijk (1972, 1977a), and a more general interdisciplinary study of macrostructures is given in van Dijk (1980a).

⁷ Kay Jones (1977) provides an extensive discussion of the notion of 'theme' in discourse.

⁸ We of course think here, first of all, of speech act theory as it was developed by e.g. Austin, and made known especially through Searle (1969). For subsequent work in linguistics, see e.g., Wunderlich (ed.) (1972), Cole & Morgan (eds.) (1975), Sadock (1974), Katz (1977) and Schmidt (ed.) (1976), among many other studies. Most of this work, it should be noted, is about the pragmatics of isolated words or sentences.

⁹ For this discourse approach to pragmatics, see e.g. van Dijk (1977a, 1978c).

¹⁰ Work on stylistics and rhetoric is well-known and need not be referred to here.

¹¹ Particular superstructures, such as narrative or argumentative ones, are well-known from work in anthropology, semiotics and literary scholarship on the one hand, and philosophy on the other hand. The more general notion of 'superstructure' was introduced in van Dijk (1978) and its relations with macrostructures discussed in van Dijk (1980a), in which also further references can be found about the particular kinds of such structures.

¹² Grimes (1975) is one of the few textlinguists who discusses this kind of 'functional' relation between sentences in discourse.

¹³ See e.g., work by Sacks, Schegloff, Cicourel, Turner, and other so-called 'ethnomethodologists', e.g., in Sudnow (ed.) (1972), Turner (ed.) (1974) and Schenkein (ed.) (1977). For an elementary introduction, see Coulthard (1977). One of the more important papers on turn-taking in conversation is Sacks, Schegloff and Jefferson (1974).

¹⁴ Some of the more important monographs and readers on the psychology of discourse processing are e.g. Kintsch (1974), Meyer (1975), Thorndyke (1975), Freedle (ed.) (1977), Just and Carpenter (eds.) (1977). The artificial intelligence approach of this topic is represented e.g., in Schank and Abelson (1977).

The brief summary of a cognitive model of discourse comprehension given below is based on results from the work mentioned above, and more in particular on theoretical and experimental work reported in e.g., van Dijk (1977, 1980a), van Dijk and Kintsch (1977) and Kintsch and van Dijk (1978).

¹⁵ A first discussion of such FACTS and their relevance in a cognitive model is presented in van Dijk (1980a).

¹⁶ For extensive discussion about the cognitive role of macrostructures, see van Dijk (1977) and especially van Dijk (1980a).

¹⁷ Cognitive processing of superstructures, mainly narrative ones, has been theoretically and experimentally studied in Rumelhart (1975, 1977), Thorndyke (1975), Mandler & Johnson (1977), among others. See also our own work in this domain mentioned above, carried out in collaboration with Kintsch. A collection of papers on story comprehension, which gives a broad survey of the various existing models, can be found in van Dijk, ed., 1980.

¹⁸ The notion of 'cognitive set' has been introduced in van Dijk (1979a), but its properties were of course known earlier, e.g., in social psychology (see e.g., Fishbein and Ajzen, 1975, and references given there). For the central knowledge component of the cognitive set, which has been receiving much attention especially in artificial intelligence, see below.

¹⁹ These notions have first been used in artificial intelligence, not only for discourse comprehension, but for information processing in general. The notion of 'frame' is due to Minsky (1975). See also several contributions in Bobrow and Collins (eds.) (1975) about the notion of 'frame'. The notion of 'script', which is very similar, is mainly discussed in work by Schank. See e.g., Schank and Abelson (1977), who also provide an interesting analysis of the role of knowledge in story comprehension.

²⁰ See e.g., Sinclair Coulthard (1975) and Goeppert (ed.) (1977).

²¹ The social and social psychological aspects of teaching interactions in institutions will be neglected here, although its relevance for the discourse analysis of instructional communication in the classroom is of course considerable. See e.g., Morrison & McIntyre (eds.) (1972).

²² See e.g., Laberge Samuels (eds.) (1978) among the more recent studies, from which it is also

obvious that reading studies are as yet hardly focussing on discourse comprehension. Exception should be made for several recent studies from the Center for the Study of Reading of the University of Illinois at Urbana-Champaign.

²³ See e.g., Keenan and Klein (1975), but also Piaget's classical study of 1926 (Piaget, 1959).

²⁴ Experimental work on children's story comprehension has recently been carried out by Mandler and Johnson (1977), Mandler (1978), among others.

²⁵ I know of hardly any systematic discourse analyses of the structures of various kinds of textbooks. In van Dijk (1977c) we have only given a systematic content and method analysis of literature text books used in Dutch secondary schools, but the aim of this study was not primarily the structure of text books, but rather a critical analysis of literary education and of current literary ideologies underlying teaching and text books. Some of the more programmatic statements made below about the integration of language use, discourse, communication and literature teaching, have been worked out more in detail in this book.

²⁶ See Breuker (1979).

²⁷ For a collection of recent work in this area, see Anderson, Spiro and Montague (1977).

²⁸ Among the early and interesting attempts in this area has been the work of Moffett (1968), and Doughty, Pearce and Thornton. 1971. See also Allen and Widdowson (1974), and much work done in Western Germany on broad programs for language and communication curricula. See also van Dijk (1977c).

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