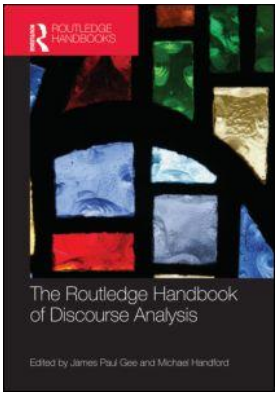

The Routledge Handbook of Discourse Analysis

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Discourse and knowledge

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Discourse and knowledge

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Introduction

Both *knowledge* and *discourse* are fundamental notions in the humanities and social sciences. It is therefore surprising that so little detailed research has been done on the equally fundamental relationship between these two notions.

Epistemology has generally ignored discourse, and linguistics and discourse analysis only marginally deal with knowledge, for instance as old or given 'information' in the study of topic and focus. The social sciences have dealt with knowledge (especially scientific or medical knowledge), but again barely do so in terms of the discourses expressing or regulating such knowledge. It is therefore the task of this chapter to summarize a theory of 'natural' knowledge and of its fundamental relevance for the study of text and talk. Since cognitive and social psychology are the only disciplines that have paid extensive attention to the role of knowledge in discourse processing, our general perspective on this relationship will generally be sociocognitive.

Elements of a theory of natural knowledge

As a summary of epistemology, both historically and more recently in the relation to the humanities and social sciences, is not possible, the following properties of knowledge that are relevant to this chapter will be discussed (for classical as well as modern theories of knowledge, see, e.g., Stehr and Meje, 1984; Wilkes, 1997; Goldman, 1999; Bernecker and Dretske, 2000).

- Knowledge is justified belief shared by the members of an (epistemic) community.
- *Justification* (validation, etc.) of beliefs is based on the epistemic *criteria* or *standards* of the knowledge community (K-community), such as reliable observation, sources or inference. Different K-communities may have different K-criteria. K-criteria may be formulated by recognized organizations, institutions or experts of the community.
- Knowledge is *relative* to the K-community: what is knowledge for one K-community may be mere or false belief of another community. In other words, we do not deal with absolute, 'true' beliefs, independent of K-communities and of people who know and believe (see also García-Carpintero and Kölbel, 2008).
- *Truth* is an attribute of assertions (talk or text) and not of beliefs, which we assume correspond to, or to represent, facts or states of affairs in some situation or possible world.
- Knowledge is *contextual*: what counts as (justified) belief in one context (e.g. in everyday life) may not be justified in another context (e.g. in a specialized context); and what may be

accepted as knowledge today may be rejected as false belief or superstition later (see also Preyer and Peter, 2005).

- Knowledge is routinely *presupposed* or *taken for granted* in the public discourses of a community. This is one of the fundamental basic relationships between discourse and knowledge.
- There are different *types* of knowledge. The knowledge we here deal with is also called *declarative* knowledge (knowledge *that*), as distinct from *procedural* knowledge or ability (knowledge *how* …). Also, in this chapter we deal mostly with *social* (shared) knowledge of a community, and not with *personal* knowledge. Similarly, we may distinguish between *general* (or generic) and *specific* knowledge (as between knowledge about wars or knowledge about the Second World War), between *abstract* (e.g. logical or mathematical) and *concrete* knowledge, between *fictional* (about the characters of a novel) and *real* knowledge, and so on – depending on the category of knowers, the relation between knowledge and the world, and the kind or level of the knowledge in question.
- Social knowledge is *represented* as *distributed cognition* in the *semantic memory* (part of long-term memory) of the members of a K-community (Salomon, 1993; Kronenfeld, 2008).
- Knowledge consists of a system of *concepts* organized by *categorical* relationships (chair is a kind of furniture, etc.) and by more complex *schemata* or *scripts* (e.g. what a kitchen or a person looks like; what to do when one goes to the movies) (Schank and Abelson, 1977).
- Knowledge is *grounded in the neurological structure* of the brain and its *modal* specialization derived from our repeated everyday experiences with our environment (e.g. the visual information about a car, the auditory noise of a car relate to the neural motor areas that allow us to drive a car, to the emotional part of our brain that enable us to love or hate cars, etc.; Barsalou, 1999, 2003, 2008).
- Knowledge is traditionally *represented* or *described* in terms of *propositions* that can be expressed in natural or formal languages. For practical purposes this may do, since we need a natural language to talk about knowledge. However, it is doubtful that the mind features propositions to represent knowledge (such as 'a car is a means of transport'). It seems more plausible to conceive of knowledge in terms of specific *networks* or *schemata* that might be related to the neurological structure of the brain.
- Knowledge may be *acquired* from (reliable) discourse, as we shall see below, or by abstraction and decontextualization from concrete personal experiences represented as subjective *mental models* in episodic memory (also part of long-term memory).
- *Mental models* are subjective representations of *events* or *situations* in which a person participates at a certain *moment of time*, at a certain *place*, with other participants (with variable *identities* and social *roles*), engaged in a specific *action* and with specific *goals*. Beside personal opinions, these models may feature emotions. Conversely, we use and apply our knowledge to interpret and represent our daily experiences and *construct* them as mental models. As we know from novels, movies and fantasies, people may construe mental models that do not correspond to reality.

Mental models in communication and interaction

Mental models play a central role in the *understanding and production of discourse*. Since they represent the events as we have experienced them (or heard about), they are the basis of all discourse genres based on the representation of specific events, such as conversations, stories or news. And, conversely, when understanding text or talk, recipients typically construe or update a semantic mental model of the situation or events referred to by that discourse: a *situation model*, stored in the episodic memory (see Johnson-Laird, 1983; Van Dijk and Kintsch, 1983; Kintsch, 1998; Zwaan and Radvansky, 1998; Van Oostendorp and Goldman, 1999).

However, it should be repeated that such models of personal beliefs are construed not only on the basis of personal experiences (perception, discourse, etc.), but also by the *application* or *instantiation* of more general, socially shared knowledge and beliefs. It is also for this reason that we are able to express and communicate our mental models to other people, and hence this is why discourse is *meaningful* and *understandable* in the first place. That is, through discourse, communication and interaction, other language users of the same language and knowledge community are able to reconstruct (at least more or less) *what we had in mind* – namely a mental model. In sum, *understanding text or talk means construing a mental model for such discourse, or of the intentions (mental models) of the speaker*. And, vice versa, planning a discourse or action means construing a mental model for such communicative verbal activity.

With the theory of mental models we have the crucial interface between discourse and knowledge on the one hand, communication and interaction in general on the other: human beings are able to 'read the mind' of others through plausible and often reliable reconstructions of the mental models of others.

Context models

Language users not only form *semantic* situation models of the events referred to in a discourse, but also reflexively construe dynamic *pragmatic* models of (each moment of) the very communicative situation in which they participate themselves, and these are called *context models* (Van Dijk, 2008a; see also Givón, 2005). These models are crucial for the management of discourse, because they represent the way language users interpret their current environment as relevant for the current discourse. Context models enable language users to adapt their discourse to the communicative situation, which is a crucial condition for their discourse to be *appropriate*. Such context models typically feature the self in various communicative roles (speaker, recipient, author, etc.), social roles or identities (professor, journalist), social categories (gender, class, age, etc.), relationships (friend, enemy, assistant), as well as the current goals, intentions and knowledge state of the participants at each moment of interaction. Since at least the time, the knowledge and the intentions of the context model change permanently during discourse processing (production, comprehension), context models are fundamentally *dynamic*.

One of the crucial functions of context models is the *management of knowledge in interaction*. That is, language users, using strategies of 'audience design', need to adapt their discourse and actions to the assumed knowledge of the other participants. Speakers generally need not assert what they know to be well known by the recipients, and hence they may *presuppose* that information in discourse. Because general sociocultural knowledge is shared by members of the same knowledge community (culture, society, country, city, profession, etc.), language users often know that the recipients know what they themselves know. Membership of the same epistemic community is the basis of a powerful and simple strategy for the pragmatic management of shared, general sociocultural knowledge, and it is essential for the construction of semantic mental models that represent the understanding of discourse. Among many other functions, context models contribute to the construction of the *common ground* of participants in an interaction (Clark, 1996).

Context models not only feature a knowledge device to handle epistemic strategies. They also represent the mutual *intentions* of the participants. Recognizing the intentions of others is a basic condition of all human interaction (Tomasello, 2008). To understand an action, and hence also a communicative action, people need to attribute an intention to the observed conduct of an actor/speaker. But, since such intentions themselves cannot be directly observed, people need to do what is called 'mind reading', that is, they have an implicit 'theory of mind' that allows them to

make inferences about the intentions of co-participants, for instance on the basis of their *simulation of other minds* in their own mind (Givón, 2005; Goldman, 2006; Barsalou, 2008), using their observations of the current conduct, eye contact, and so on. It has recently been found that human brains are specially equipped with special 'mirror neurons' that are able to perform such simulation.

Strategies of discourse processing

With the theoretical notions introduced above we now are able to briefly summarize how discourse is (mentally) produced and what role knowledge plays in this process. It is important to realize that such processes are *strategic*, that is, fast but based on assumptions and inferences that may be misguided, so that errors may ensue. Here are some of these strategies of discourse processing (for detail, see e.g. Van Dijk and Kintsch, 1983; Britton and Black, 1985; Britton and Graesser, 1996; Graesser *et al.*, 1997; Kintsch, 1998; Graesser *et al.*, 2003; McNamara and Magliano, 2009) – beginning with discourse production (most psychological studies of discourse deal only with comprehension, which is easier to control in the laboratory):

Formation of an experience model

In a given social situation (a conversation, giving a talk, visiting a doctor, etc.) an actor forms a mental model of this situation or experience (an experience model), including a mental representation of the current *setting* (time, place) her *self* (and of her current roles and identities), her *co-participants* (and their current roles and identities), her current *goal(s)*, current *intention + conduct (action)*, as well as the current *knowledge* and *intentions* of the co-participants. This experience model controls all (inter) action in a situation.

Formation of the context model

If the situation currently represented requires verbal communication, the actor forms a context model with the same overall structure as the experience model, but with specific communicative roles (e.g. speaker or author, recipient), goals, intentions of communicative actions as well as relevant knowledge that is presupposed, and knowledge (wishes or opinions) that must be communicated. It is this context model that dynamically and ongoingly controls all further discourse production, so as to make sure that the discourse, at all levels, be appropriate in the current situation.

Formation/selection of situation model

If knowledge about an event is to be communicated, as in a story or news report, the (subjective) situation model of that event is activated, and the context model will strategically select the information that is now important, relevant and appropriate (and as yet unknown) in the current communicative situation, for the current audience.

Genre selection

Under the influence of the context model, and hence depending on the current setting, participants, communicative activity (e.g. conversational storytelling, parliamentary debate, news writing, etc.), goals and intentions, a relevant genre is being selected to organize the

discourse, for instance a conversational story, a parliamentary speech or a news report in the press. Depending on the communicative event, this genre selection may take place at the same time as the construction of a context model. Indeed genres are conventional discourse practices largely defined in terms of the context.

Semantics

Under the general control of the context model and on the basis of the situation model, the selected relevant (interesting, etc.) information is introduced into the semantics module of discourse production, which controls the production of meaningful discourse. This module first of all construes the macro-propositions that define the overall topics of the discourse and may directly give rise to the production of titles, summaries and leads. Under the control of these global topics (macro-propositions) there follows, on line, the linear production of the discourse, proposition by proposition, word by word, selecting from the situation model the relevant details of the situation talked about and linearized according to various strategies – e.g. chronological sequence in storytelling or relevance, recency and genre schema of news reports – under the control of the rules of local (sequential) coherence between propositions. Propositions that – according to the information about the recipients in the context model – are already known to the recipients need not (or may not) be included in the semantic representation of the discourse or may only be marked as presupposed (e.g. by being put in initial subordinate clauses).

Syntax and lexicon

The propositions (sentence meanings) thus produced are sequentially introduced, one by one, into the syntax and lexicon modules for expression, in ordered sequences of lexical items, and in the relevant syntactic patterns that are most suitable for the contextually appropriate expression of the propositions (for details, see Levelt, 1989).

Expression

At the same time, these syntactically organized strings of lexical items (clauses, sentences) are being introduced in any of several multimodal expression modules, such as those of phonology, visual or other articulation, still under the overall control of the context model, so that also the pronunciation, typography, images, and the like are situationally appropriate.

Cross level

All expressions (formats, syntactic forms, lexical items, sounds, visuals, etc.) are selected not only as a function of the underlying model of the events talked about, and of the global and local discourse meanings selected from this model, but also as a function of the pragmatic context model that conditions the appropriate realization of the discourse in the current communicative situation.

Of course, this is merely a general summary of very general and complex strategies involved in discourse production. The process of *discourse comprehension* more or less follows these strategies in a different order, beginning with the same interactional situation, experience model and context model, but now language users assume the role of the recipient and represent themselves as such in their own context model. That is, given the current goals as represented in their own context model, recipients construe a subjective situation model (an interpretation) of the discourse they strategically understand, word for word, sentence by sentence, turn by turn, etc. Again, they are

able to construe the model that represents their understanding by *activating relevant fragments of their general social knowledge*, by *instantiating* or *applying* this general knowledge to a specific event and often by reactivating or updating previous models – construed during previous communicative events. This also means that a mental model is much richer than the text itself, because it may feature propositions that are *inferred* by recipients from their general knowledge but not expressed in the discourse itself – such as plausible causes or consequences of action.

Knowledge and the structures of discourse

We have argued that, within our sociocognitive approach, the role of context in the production and understanding of discourse is fundamental. Since knowledge is part of the context, each level of discourse structure depends on the knowledge of the participants, as explained above. In this section we analyse how the structures of discourse are controlled by the knowledge of the language users.

This is first of all obvious for the knowledge of the language itself. Yet there is no clear boundary between knowledge of the language and knowledge of the world. This is especially clear for our *lexical* knowledge, which combines knowledge of words and their meanings with our conceptual knowledge of the 'world'. Thus it is not likely that the meaning of the word *terrorism* is very different from what we know about terrorism as a social or political phenomenon.

The important implication of the contextual approach to discourse is that participants already know much about each other, the intentions, the goals and much of the meaning of discourse even before producing or understanding the first words. Thus the degree of detail and explicitness of a discourse depends on the mutual knowledge of the participants.

In order to examine in more detail the ways knowledge is related to the structures of discourse, we shall examine how knowledge is presupposed, implied, expressed or signaled in a concrete example.

Example: the inaugural speech of President Obama

As example in the rest of this chapter we will use some fragments of President Obama's inaugural address of 20 January 2009 (the complete text of this address can easily be downloaded from the Internet). The reason why we choose this example is that it presupposes the shared knowledge of most US citizens, as well as of many other people in the world. It has some of the properties of spoken language, but its formal style at the same time is close to written texts.

Phonology: knowledge, information and the role of focus

We must be brief about the way knowledge is expressed or presupposed by the sound structure of discourse, also because we cannot show the actual recording of Obama's speech here. However, let me mention at least one way knowledge (or 'information') is typically signalled in text and talk, namely in what is called the *focus* (or *comment*) (see Lambrecht, 1994; Erteschik-Shir, 2007). This functional part of sentences usually receives special stress, and in English and many other languages it tends to occur at the end of the clause (or intonation unit). Relevant for our discussion here is that focus generally manifests that part of the 'information' of the clause or sentence that is 'new' and less predictable than other parts of the sentence – e.g. as compared to the initial or 'topic' part of the sentence. This sentence topic typically continues previous parts of the discourse or of the context, for instance with a pronoun or definite description, say the deictic pronoun *I* (referring to the speaker in most discourse). Consider, for example, the opening lines of President Obama's speech:

(1) I stand here today humbled by the task before us, grateful for the trust you have bestowed, mindful of the sacrifices borne by our ancestors.

Contextually shared knowledge in this fragment is expressed by the pronoun *I* referring to the current speaker – as well as by the formal plural pronoun *us*, typically used by heads of state – by the pronoun *you* referring to the audience and more generally to the people of the USA, by the present tense of the verb *stand*, by the deictic adverb *today* referring to the temporal dimension of the setting category of Obama's context model, and by the possessive adjective *our* referring to the people of the United States (again, represented by Obama as recipients in his context model).

Also contextually (visually) known, for those present or those watching TV, is that the president is standing while delivering his address and that he is now assuming the presidency, and hence assuming a very important task, facts that refer to the political meaning and function of his speech.

In other words, the first clause is nearly entirely an expression of the context model of Obama when he delivers his address. Part of this clause is the less stereotypical expression of the current mood of the president – also part of the context model – when he describes this as *humbled*, a well-known modesty move that is part of the overall pragmatic strategy of positive self-presentation.

So the contextually 'new' information in this fragment (information not yet known or inferable by the audience) is what Obama says about himself and his current state of mind or emotions. Hence the main focus in this fragment is carried by the words *humbled*, *grateful* and *mindful*. In this case, the focus is not only generated by the functional nature of the new information conveyed by these words, namely as implementing a modesty move as part of a self-presentation strategy, but also by the rhetorical parallelism between three mind descriptions. This means that in this fragment focus is not necessarily expressed in the last part of the clauses but precisely by the first words of the last clauses, so as to give extra emphasis to the current state of mind of the president.

These persuasive moves, performed through the use of these discourse structures, have as their first goal to influence positively the context models of the recipients, a process that in classical rhetoric was called *captatio benevolentiae* and in more contemporary social psychological jargon is called *impression management* (Tedeschi, 1981).

Syntax

Word order, topic functions, pronouns, definite descriptions, nominalizations, passive structures and many other syntactic properties of discourse are variously based on the availability or accessibility of information in current situation and context models (for details, see e.g. Givón, 1983; Lambrecht, 1994; Partee and Sgall, 1996).

In the first sentence of Obama's speech we already have seen an example when he refers to *the trust* and *our ancestors*, that is, information about discourse actors that can be derived from the contextually activated information about the 'people of the USA' he is now addressing.

Thus in the speech of Obama we find the following passive sentences, gerunds and nominalizations whose actors significantly remain implicit, that is, they are not irrelevant, simply inferable from preceding or following discourse or from world knowledge:

(2) (i) Homes have been lost; jobs shed; businesses shuttered.
(ii) (…) a sapping of confidence (…)
(iii) false promises, the recriminations (…)

These phrases do not say who lost homes, shed jobs or shuttered businesses, or who is sapping our confidence or making false promises. Sometimes this is obvious, while inferable from our social knowledge (those who lose homes), sometimes it is not easily identifiable who does what (as in sapping our confidence), and sometimes a specific political accusation is avoided, as in (iii), which may be referring to the previous administration. In general though, Obama's speech is quite explicit with its agents, especially his positive agents, first of all himself. Also, in this speech, his slogan 'Yes we can' appears in many ways in sentences referring to all the energetic actions he, his administration and the American people are going to engage in. Hence in this slogan there is no agent obfuscation through passives or nominalizations. More generally, the ideological strategy of ideological discourse is to emphasize *our* good things and *their* bad things (and to de-emphasize *our* bad things and *their* good things) (Van Dijk, 1998). Thus our positive agency is emphasized through explicit self-reference to the agents of these acts. On the other hand, the conciliating and diplomatic policy of Obama is shown by the way in which he does not emphasize and make explicit the bad things of the opponents or the enemies, referring to them only in quite abstract phrases.

Meaning: From lexical items to propositions

Once we have construed the first phase of a dynamic context model for a communicative event, as the members of the audience do when starting to listen to Obama's speech, the first step in the complex strategy of discourse comprehension is the decoding and interpretation of *words*. We have seen above that 'looking up' the meaning of words in our mental lexicon is inextricably related to the world knowledge associated with the things talked about. Thus we know that words such as *humbled* and *grateful* are about the opinions or emotions of people. Probably not part of the lexical definition of these words is the conventional, cultural association or connotation that these are 'positive' feelings. Using them when referring to oneself, as Obama does, thus has the political communicative implicature of positive self-presentation, in order to make a good impression from the start, that is, a mental model of the recipients featuring a positive opinion or an emotion of liking.

However, these words do not appear alone, but are part of clauses, which themselves are part of a complex sentence. Hence, we do not only need to make sense of these words, but also to make sense of the clauses and of the sentence, namely by construing *propositions*. Though propositions are traditionally defined in philosophy as units that may be true or false, in a linguistic and discursive framework we rather regard them as units that define *meaningfulness* (Saeed, 1997).

> Propositions as we know them from logic and philosophy—consisting of a predicate and some arguments, and modified by various modalities – may not be the most adequate ways to represent the sometimes subtle and complex sentence meanings in natural language. Probably some kind of schematic structure representing events or states of affairs, with various categories (e.g. for Settings, Events or Actions, various Participants with different roles, some Event or Action, Goals, etc.), would be more adequate, and closer to the structure of the mental models we form when we understand discourse. However, mostly for practical and formal reasons (propositions are easier to express in natural language and can be formalized), for the moment we represent local and global discourse meanings as propositions.

For instance, when construing a proposition or event schema, when Obama thanks ex-president Bush, the role of Bush in the sentence is that of an addressee of the action of thanking. Propositions may be modified by modal expressions such as 'It is possible (probably, necessary) that …', or 'It is

permitted (obligatory) that …', as we see in the expressions *surely* and *must* in the following fragment of Obama's speech, both expressing conviction and necessity:

> (3) But our time of standing pat, of protecting narrow interests and putting off unpleasant decisions – that time has *surely* passed. Starting today, we *must* pick ourselves up, dust ourselves off, and begin again the work of remaking America.

Indeed, throughout Obama's speech we find not a single modality involving possibility or probability, only assessments that are formulated in quite affirmative modalities.

Sequences of propositions: Local coherence

In the propositions subsequent to his first sentence, Obama refers to his various states of mind, his tasks as president, the people of the USA and their ancestors, and former President Bush. All these propositions make sense within the political knowledge script of the ritual of assuming the presidency, a presidential speech, recipients and so on. In that sense, the first sentence is both semantically and pragmatically meaningful.

In other words, this is not an arbitrary sequence of propositions, but a *locally* (or *sequentially*) *coherent* sequence of propositions that may be interpreted as a mental model of the current feelings and actions of Obama (Van Dijk, 1977). One way to define meaningfulness in a proposition and in a sequence of propositions is by reference to their defining a possible situation model for the recipients. And we have seen above that such models activate and integrate instantiations of general knowledge as well as necessary inferences in order for discourses to be understood as coherent.

Note that the mere repetition or continuity of discourse referents, for instance as expressed by pronouns (*Obama … he … he*), is neither necessary nor sufficient for such local discourse coherence. What is needed is that the *whole propositions*, including predicates, argument roles and modalities are thus related according to the mental model. Indeed, it is not primarily the *meaning* of propositions that defines the local coherence of discourse, but rather their *reference* to situations, events or actions as construed by the mental models of the discourse participants. Again, we witness the fundamental role of knowledge-based mental models for the production and comprehension of coherent discourse.

Consider the next paragraph of Obama's speech:

> (4) (i) Forty-four Americans have now taken the presidential oath. (ii) The words have been spoken during rising tides of prosperity and the still waters of peace. (iii) Yet, every so often, the oath is taken amidst gathering clouds and raging storms. (iv) At these moments, America has carried on not simply because of the skill or vision of those in high office, but because We the People have remained faithful to the ideals of our forebears, and true to our founding documents.

In order for this sequence of sentences/propositions to be coherent, we need general and political knowledge about the US presidency, taking the presidential oath, and pronouncing an inaugural speech. We need to know that taking the oath is a type of discourse, and that discourses consist of words and are spoken. Thus the second sentence is coherent with the first, because it continues to characterize the event referred to (taking the presidential oath) in the first sentence, namely the social circumstances in which these oaths were taken in the past of the USA. At the same time, good and bad periods may be coherently referred to through various mutually coherent NATURE metaphors, such as rising tides with prosperous moments, still water with peace, and raging clouds and raging storms with difficult periods. Finally, the coherence is established by the

mental model fragment about the qualities and ideals of the American people and their leaders – itself part of the main mental model of Obama's speech, namely the current difficult period of the world and of the USA in particular, and how to meet that challenge. At the beginning of sentence (iv) we observe a temporal phrase (*at these moments*) that makes explicit the temporal coherence (as events in the past) of the paragraph.

Although sequential discourse coherence is largely based on reference and hence to model of the participants of the situation talked about, local coherence may also be *intensional* (based on meaning), for instance when one proposition has a *functional relation* to other propositions – as a generalization, specification, example, contrast and so on. In our example the second sentence and the third sentence and their propositions are related as specifications of the first, because they say something more specific about the (circumstances) of the presidential oath. Again, we need to activate our general knowledge of such oaths to be able to infer what possible properties they may have, including what counts as the relationship of specification – which presupposes a hierarchical underlying organization of knowledge.

Implications

Discourses are like icebergs. Only a minor part of their meaning is 'visible' as *explicit* propositions expressed in their sentences. The major part of their meaning remains implicit, namely as *implied* propositions (Bertuccelli-Papi, 2000). Language users know or assume that recipients are able to *infer* these implied propositions on the basis of generally shared knowledge, and thus construe a mental model for the discourse. This means that mental models are much more detailed than the discourses based on them. The definition of implications (implied propositions of a discourse) is thus very straightforward: all the propositions of a situation model that are not expressed in the discourse itself. Despite the common ground of shared sociocultural knowledge, there are differences between epistemic communities even within the same culture (nation, society, etc.), and also differences between individual members. Those recipients who know more about Obama, presidential addresses, the USA and its history or the current social, economic and political situation of the world will be able to infer more propositions from Obama's speech, and hence are able to build richer mental models (interpretations) for that speech. Take for instance the next paragraph of Obama's speech:

> (5) (i) That we are in the midst of crisis is now well understood. (ii) Our nation is at war, against a far-reaching network of violence and hatred. (iii) Our economy is badly weakened, a consequence of greed and irresponsibility on the part of some, but also our collective failure to make hard choices and prepare the nation for a new age. (iv) Homes have been lost; jobs shed; businesses shuttered. (v) Our health care is too costly; our schools fail too many; and each day brings further evidence that the ways we use energy strengthen our adversaries and threaten our planet.

This passage is quite general and abstract in its formulations. To know what Obama talks about, more concretely, one needs to activate and apply much general knowledge about the social, political and economic situation in the world and in the USA. Thus sentence (ii) will be understood by many as referring to the wars in, for instance, Iraq and Afghanistan, and 'far-reaching network of violence and hatred' as referring especially to Al Qaeda (among other terrorist groups). Similarly, the vague expression 'greed and irresponsibility on the part of some' in sentence (iii) may be understood as referring to banks or other financial institutions that have been blamed for the current economic crisis, whereas 'collective failure to make hard choices' may be construed as referring to specific national policies to control the market. And so on.

There are of course various strategic reasons for this kind of vagueness and indirectness; this is not just a question of style in such high-level presidential addresses. Thus Obama is able to avoid accusing Muslim fundamentalists, because such specific accusations might be resented in the world of Islam. Accusing bankers and the market more concretely may not sit well with large parts of the financial and economic elites. Specifying the reference to the failure to make hard choices would probably mean accusing the Bush administration. Yet knowledgeable recipients are able to make these inferences for themselves and hence know whom Obama is referring to. In many situations of political and diplomatic communication, but also in everyday conversation, one function of abstractness and implicitness is *deniability*. Against counter-accusations, Obama may always claim that he did not actually *say* what many people understand he *meant*.

Presuppositions

One of the central features of the knowledge management engaged in during the production of discourse is the use of presuppositions, that is, propositions that must be known (or accepted as true) for other propositions to be meaningful (true or false, etc.) (Krahmer, 1998). One might say that, whereas implications, as discussed above, are inferred as *consequences* of propositions in a discourse, presuppositions are like the *conditions* of propositions, as is the case for all prior knowledge. Thus presuppositions are implied propositions following from earlier parts of the discourse, the situation model, the context model or by inferences from general knowledge, thus making following expressions (words, phrases, clauses, sentences, etc.) meaningful. Pragmatically speaking, presuppositions are propositions that are implied by such expressions without being explicitly asserted. This may also have the function of deniability, as we have seen for all implications.

Presuppositions may be detected and interpreted by language users because they are often signaled by specific grammatical structures, so called presupposition 'triggers', such as special ('factive') verbs and adverbs, definite articles, initial that-clauses, and so on. Well-known examples are factive verbs such as *stop*, *end*, *remain, know*, *realize*, and *discover*, or adverbs such as *even, not only, again, and too*, among many others. Some of the presuppositions in these initial paragraphs of Obama's speech are for instance the following (with the expressions that trigger the presuppositions between parentheses).

- Bush has served the nation (*was generous, cooperated)(to thank for*)
- Those in high office were skilled and had vision (*not simply, because*)
- We are now in the midst of a crisis (Initial that-clause of *It is understood that*)
- Our ways to use energy strengthen our adversaries (*evidence that*)
- The stale political arguments that have consumed us for so long no longer apply (*fail to understand that*)
- Our power alone cannot protect us, nor does it entitle us to do as we please (*they understood that*)

Presuppositions are not always propositions that are assumed by the speaker to be known to the recipients. They may be used to state, indirectly or obliquely, what was not known or stated before – again, as a well-known strategic means to make (deniable) statements without explicitly asserting them. Thus the press and politicians may typically state that 'the delinquency of immigrants worries them', thus presupposing, with the use of the definite article, that immigrants are delinquent (Van Dijk, 1993). See also the following fragment of Obama's speech:

> (6) On this day, we come to proclaim an end to the petty grievances and false promises, the recriminations and worn-out dogmas, that for far too long have strangled our politics.

In this fragment, to proclaim and 'end to' petty grievances, false promises and recriminations presupposes that there actually were such grievances, promises and recriminations. He does not actually assert this, but presents this information as if everyone knows what he is talking about. On the other hand, presupposed may be those propositions that are taken for granted within a cultural community or ideological group, as is the following presuppositions in Obama's speech:

- In reaffirming the greatness of our nation (…)
- We remain the most prosperous, powerful nation on Earth (…)

Descriptions

Another important semantic property of a discourse controlled by underlying knowledge is the way discourse *describes* the 'world', that is, situations, events, actions, objects, people, etc. Although this dimension of text and talk is quite crucial in discourse semantics, we know as yet quite little about it, but let us summarize some properties of descriptions.

Granularity. The first element of a description we may pay attention to is what may be called, with a metaphor borrowed from photography, *granularity*. That is, all situations and events (and their components objects, people, etc.) may be described more finely or more coarsely, with more or less detail. Granularity may be defined for a discourse as a whole, but may also vary within the same discourse. Obama speaks about the current situation of the USA and the world, as well as about his own planned actions and policies, with very coarse granularity:

> (7) For everywhere we look, there is work to be done. The state of the economy calls for action, bold and swift, and we will act – not only to create new jobs, but to lay a new foundation for growth. We will build the roads and bridges, the electric grids and digital lines that feed our commerce and bind us together. We will restore science to its rightful place, and wield technology's wonders to raise health care's quality and lower its cost. We will harness the sun and the winds and the soil to fuel our cars and run our factories. And we will transform our schools and colleges and universities to meet the demands of a new age. All this we can do. And all this we will do.

Obviously, in a general speech and policy document, no details of this future 'work' and 'action' are specified – how job will be created, roads and bridges built, etc. Each of these actions may in the future give rise to so many policy documents.

Level. Related to, but different from, granularity is the *level* of a description. That is, we may describe events at a very high level of abstraction and in very *general* terms, but also at lower, more *specific* levels. And for each level we may provide more or less details, that is, enhance or diminish granularity. Thus in headlines we generally find a high-level, general description of an event that will be specified in the rest of the news report. This is also because headlines typically express the macro-structure or topic of a discourse (see below). See the following passage from Obama's speech:

> (8) For us, they packed up their few worldly possessions and traveled across oceans in search of a new life. For us, they toiled in sweatshops and settled the West; endured the lash of the whip and plowed the hard earth. For us, they fought and died, in places like Concord and Gettysburg; Normandy and Khe Sahn. Time and again, these men and women struggled and sacrificed and worked till their hands were raw so that we might live a better life. They saw America as bigger than the sum of our individual ambitions; greater than all the differences of birth or wealth or faction.

Note how in this passage there are high-level action descriptions (travelled across oceans, etc.), but also more specific descriptions that emphasize hard work (packed up, endured the lash of the whip, plowed the hard earth, worked until their hands were raw). This semantic feature of description also has overall rhetorical functions, namely to emphasize the importance or relevance of some event or action described.

Perspective. Events, actions and situations may be described from different perspectives, for instance from the perspective of onlookers or participants, with or without access to their thoughts, from far or from close by, and so on – again, as we would describe the way cameras are used to record visual images.

Action. Many discourse types are about action, as is the case for storytelling, news reports and historical documents. Such actions may also be described in many ways – first of all, as seen above, with coarser or finer granularity or at more or less general or specific levels. But actions have many other properties that are attended to in a description, namely whether something was planned or intended, or more or less spontaneous, more or less conscious, as an action from a different kind of actor (see below), as more or less successful, and so on (see e.g. Van Leeuwen, 1995).

Actors. Similarly, there are many ways to describe actors, namely as a collective or institution, as anonymous, named or described, as personal or impersonal, as generic or specific, as individual persons or as members of a category, as an aggregate or collective and so on (see Van Leeuwen, 1996).

Similar remarks may be made for the descriptions of events, situations, objects, places, nature and so on.

Relevant, for us, of these various types, modes and properties of description is that they presuppose both a general knowledge of the world and the mental models underlying discourse. Coarse descriptions lead to the formation of coarse mental models when recipients are unable or unwilling to supply the finer details of events or action. Fine descriptions not only tend to lead to finer mental models of a situation, but also signal to the recipients that the current passage of a discourse is especially relevant or important, slowing down the reading and promoting deeper processing of the information provided – and hence, most likely, better memory of the events for later recall. The same is true for high level and specific level descriptions. Actor and action description also presuppose and form specific mental models, for instance in order better to understand and explain actions, reasons, goals and outcomes of action. Describing a person merely as member of a group or category, such as 'immigrant', has a very different effect on the mental model than when we describe her or him by a name, or by a name and a role (father, mother, friend, etc.), for instance to promote identification and empathy, and hence the emotional dimension of mental models (Van Dijk, 1984, 1987). See for instance the following actor descriptions in a passage from Obama's speech:

> (9) In reaffirming the greatness of our nation, we understand that greatness is never a given. It must be earned. Our journey has never been one of shortcuts or settling for less. It has not been the path for the fainthearted – for those who prefer leisure over work, or seek only the pleasures of riches and fame. Rather, it has been the risk-takers, the doers, the makers of things – some celebrated, but more often men and women obscure in their labor – who have carried us up the long, rugged path toward prosperity and freedom.

Actors are described here hardly by category (at the end only as men and women), and neither by name, group or other usual way of actor description by the nature of their actions and by their character (fainthearted, risk-takers, doers, makers of things) and the results of their actions (the famous vs. the obscure). Obama thus abstracts from the very actors themselves and focuses on the *character* of the actors that built America. Such a description barely results in a specific mental model

of specific actors and actions, but rather in a very general, if not generic image of the history of the USA.

Evidentiality

In many discourse genres language users account for the *sources* of their knowledge – a property that has been called *evidentiality* (Chafe and Nichols, 1986). In everyday conversations, storytellers may justify or legitimate their knowledge as being acquired from reliable sources, ranging from friends, experts, the mass media or own, personal observation. Scholarly discourse is replete with references that provide the required warrants to assertions that are not the result of own research.

As with all semantic properties of discourse, evidentiality may come in many forms and may have several pragmatic and other social functions. We may provide such evidence for our current assertions in terms of our personal experiences or investigations or of those of others, of lay people or experts, in generic terms ('experts have found that …') or by specific or named sources, as we have seen for the description of authors. In the same way, we may describe the situations or contexts in which the knowledge was acquired, e.g. in a conversation yesterday with a friend, or by looking up information in Google or in an encyclopedia, or having heard it in a lecture, and so on. As always, more detail generally conveys the impression of more reliability or credibility of sources or the acquisition of knowledge, and hence is more persuasive. Obama makes many very general sweeping statements in his address when he describes, in very broad strokes (rough granularity), the current political and social situation of the world. Of course, presidential addresses have and need no footnotes. It is assumed that these discourses are written by experts and based on reliable political information of state agencies. On the other hand, we also know, for instance from the analysis of the discourses of Bush and Blair, that statements may be made whose evidentiality is at best tenuous (Van Dijk, 2008b). Obama pronounces the following brief (and quite vague) passage about the sources or his knowledge about the current situation:

> (10) These are the indicators of crisis, subject to data and statistics. Less measurable but no less profound is a sapping of confidence across our land – a nagging fear that America's decline is inevitable, and that the next generation must lower its sights.

Macrostructures: topics

Finally, discourse semantics not only accounts for the local meanings of clauses and sentences, but also for larger parts of discourse or whole discourses. Strangely, this level of description is ignored in much linguistics and even in many forms of linguistically based discourse studies, despite the crucial importance of this macro-level of discourse description. Semantic macrostructures consist of a hierarchical schema of macro-propositions that 'summarize' lower level sequences of (micro-) propositions. Macro-structures are crucial for the establishment of global coherence, the identification of global discourse topics, the planning and recall of discourse in processing, as well as the description of many genre properties of text and talk – such as headlines and leads in news reports, titles and abstracts in scholarly papers, conclusions in many kinds of discourse (for detail, see Van Dijk, 1977, 1980).

In discourse, macropropositions not only organize underlying meanings but may also be explicitly expressed and thus precede or follow lower level descriptions, namely as headlines, introductory thematic sentences or as conclusions. Thus paragraphs may start with high-level propositions that will be specified in the rest of the paragraph, as in the following fragment in Obama's speech:

(11) For everywhere we look, there is work to be done. The state of the economy calls for action, bold and swift, and we will act – not only to create new jobs, but to lay a new foundation for growth. We will build the roads and bridges, the electric grids and digital lines that feed our commerce and bind us together. We will restore science to its rightful place, and wield technology's wonders to raise health care's quality and lower its cost. We will harness the sun and the winds and the soil to fuel our cars and run our factories. And we will transform our schools and colleges and universities to meet the demands of a new age. All this we can do. And all this we will do.

Thus this paragraph starts with the very high-level call for action, then specifies the actions (create jobs, etc.), and then returns to the high level by describing our ability and determination to do so – implementing again the general Obama slogan *Yes, we can!*

Speech acts

Beyond the grammar of discourse, we also need to account for the role of knowledge in the appropriate performance of (speech) acts and for the participation in talk in interaction. Thus context models have been introduced as a sociocognitive basis for the theory of pragmatics, and hence also account for the well-known appropriateness conditions of speech acts. For instance, the condition of an assertion is that the speaker assumes that the hearer does not know *p*. (Searle, 1969). It is this epistemic condition that must characterize the knowledge component in the context model of the speaker. Similar conditions should be formulated for questions, accusations and other speech acts – and to be accounted for in the context model that represents the mutual (lack of) knowledge of the participants. We have seen in the examples above that much of Obama's speech is a (macro-)assertion, which presupposes that the recipients do not know what he affirms. This may be true for some of his emotional states and future plans, but many of the things he affirms are already generally known – as is the case in much public discourse, which has the function of recalling or emphasizing what is already generally known.

Talk in interaction

Finally, what has been outlined above for discourse in general, also holds for conversation and other forms of talk in interaction. Whereas earlier epistemic studies of discourse focused on such topics as topic-comment structure, focus, presupposition, implicatures or evidentials, also conversation analysis – so far seldom interested in more 'cognitive' aspects of talk – has now begun to study the subtle ways in which (mutual) knowledge and ignorance is managed in talk, for instance what speaker has the 'authority' or access to knowledge, and hence may make truthful claims (Heritage and Raymond, 2005; Raymond and Heritage, 2006; see also Sidnell, 2005).

Concluding remarks

From the analysis of some of the properties of Obama's speech we have seen that the role of knowledge is ubiquitous in the production, the structures and the comprehension of discourse. Discourse presupposes (semantic) situation models of events talked about, as well as (pragmatic) context models of the communicative situation, both construed by the application of general, socially shared knowledge of the epistemic community. These models control the production and comprehension of all levels of text and talk, from intonation, syntax and the lexicon, to the many types of semantic structures, notably those of implication, presupposition and description, as well

as the strategies of conversation. It is therefore crucial that a theory of discourse also feature a central epistemic component that explains how language users are able to manage knowledge in discourse processing, e.g. by appropriately adapting their discourse to what they assume the recipients to know (or not yet to know) as members of the same knowledge community. Although philosophy, cognitive science, neuroscience and the social sciences still need to be develop a coherent, integrated theory of knowledge, what we do know today already offers a framework that enables us to provide quite detailed *epistemic analyses* of text and talk.

Further reading

Unfortunately, there is as yet no general introduction to the epistemic analysis of discourse. For further reading about the topics of this chapter, the following books may be recommended:

Bernecker, S. and Dretske, F. I. (eds.) (2000) *Knowledge: Readings in Contemporary Epistemology*. Oxford: Oxford University Press.

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