HANS-JÖRG SCHMID (BAYREUTH)

An outline of the role of context in comprehension*

1. Introduction

This paper pursues a rather modest goal. It tries to bring together insights into the role of context in comprehension from several fields, mainly pragmatics, psycholinguistics and sociolinguistics, and to integrate them in a simple processing model of understanding. The key sources for this conspectus are van Dijk and Kintsch's (1983) strategy theory of discourse comprehension, Sperber and Wilson's (1995) relevance theory, and Falkner's (1997) pragmatic model of (mis-)understanding. As a starting-point, *context* will be understood as 'anything that *can have* an influence on the interpretation of an utterance'. This indicates that I will not be concerned with *actual contexts* affecting the processing of given utterances but with *potential context factors* in general.

2. Modelling context in communication
2.1 The observable act of communicating

By its very nature, context is a relational phenomenon - context is always *context of.* Traditionally context has been defined in relation to text. But since a text itself has little significance without a human processor, a better starting-point for an exploration of context is the basic setup of natural communication: a minimum of two participants, possibly more, who are engaged in exchanging messages. Since the focus here is on the most natural type of communication, i.e. spontaneous spoken discourse, the most unbiased way of thinking about these messages is as *phonetic events* (Falkner 1997: 81). This allows us to steer clear of all terminological problems related to the notion of *message.* The starting-point of the present investigation is thus a simple behaviourist model of observable acts of communication carried out by participants P_1 to P_n taking turns in producing and perceiving phonetic events PE_1 to PE_n.

2.2 Construing mental representations

Phonetic events or, more precisely, the subjective auditory perceptions (AP) of phonetic events by each of the participants (Falkner 1997: 88), serve as input for mental processes, whose outcome are mental representations (MRs) of the significance (to use a neutral term) of the phonetic events. Participants have the impression that they have understood what was said when they manage to generate an MR which seems *relevant* to a satisfying degree. According to Sperber and Wilson (1995) this is the case when

---

the MR strikes a balance between the contextual effects it achieves and the cognitive cost required to form it. MRs are hypotheses as to the communicative impact intended by the speaker. Instead of following early speech act theory, which claimed that the interpretation of the illocutionary force of an utterance is derived from the semantic interpretation, I side with van Dijk and Kintsch's assumption that "it seems likely that a hearer will in general not wait until the end of the utterance to infer what speech act is being performed" (1983: 84). Thus the MR, as it is conceived here, includes a conceptual representation of the meaning of what was said, and a representation of the illocutionary force and the relevance of the contribution to the present conversation.

Despite differences in the way sub-processes of understanding are modelled, competing theories agree that phonological, lexical, syntactic, semantic, and pragmatic decoding are necessary procedures. The precise nature of these processes is not my concern here. What is important is that decoding is more than just taking the meanings out of words and structures. Rather it is an active effort of meaning construction. It is also essential that only a naïve view of communication assumes that the MRs generated by each of the participants who take in the same phonetic event are identical. While the respective representations may be similar - and thus result in the impression that there is mutual understanding - complete identity (however this could be measured or falsified) is impossible for reasons that will become clearer in the course of this paper.

The model of communication resulting from the considerations at this stage is represented in Figure 1. The figure assumes that participant P_1 has uttered phonetic event PE. In response to their subjective auditory perceptions ($AP2$ to AP_n) of PE each of the other participants construes his or her subjective mental representation (MR_2 to MR_n) of what this phonetic event is meant to convey via phonological, lexical, syntactic, semantic, and pragmatic decoding (D).
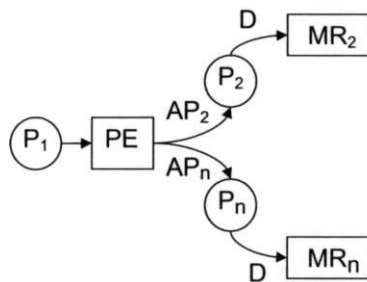

Figure 1: Construing mental representations

Decoding and the construction of MR require the full attention of the discourse participants. This is not meant as a patronising piece of advice, but as a description of the states of their cognitive systems. Due to the limitations of short-term memory we are able to process only on a fairly limited amount of words, roughly one information unit or clause at a time during on-going speech processing (van Dijk and Kintsch 1983: 349). This is what can be called our *window of attention* (Langacker 2001: 154).

2.3 Activating knowledge

The spotlight of our focus of attention does not work in isolation of course. To stick to the lighting metaphor, parts of the stage other than those in the spotlight are still bright enough to be visible and thus potentially accessible to special attention. For language processing, this means that more than what is currently being processed by short-term memory is activated during the construction of a conceptual representation. Even the most mundane conversational contributions cannot be understood without activating knowledge in addition to that related to the words and constructions heard. Reference assignment, resolution of direct and especially indirect anaphora, lexical and syntactic disambiguation, inferencing - let alone the detection and interpretation of irony, metaphor, indirect speech acts etc. - are examples of requirements for comprehension that can only be met by taking recourse to information that is not part of the message itself.

If readers are willing to accept this they may also agree that the next question must be what kind of knowledge is activated. To some extent, this question can of course be answered by taking the well-known components of the speech event (e.g. from Hymes 1967) and adding the phrase 'activated knowledge about' (*the setting, the participants, the topic* etc.). But as we will see there is more at stake than that, because such a mentalization of the ethnography of communication has important implications for the theoretical status of context. Nevertheless Hymes' parameters will guide us in solving the task of identifying the most important types of activated knowledge.

First, every MR triggered by a phonetic string is influenced by the MRs constructed recently before. There are three ways in which this is possible. First, previous utterances can be stored in their precise lexical and grammatical surface form in short-term memory. As studies on reading by Glanzer et al. (1981) have shown, the amount of material that can be temporarily stored this way is limited to at most two clauses, more often one only. The capacity for storing spoken speech verbatim may well be even lower (cf. Coulthard 1992: 245, Falkner 1997: 59). Second, important concepts from previously processed utterances are also kept active in short-term memory. As shown by Fletcher (1981) content words that play a prominent role in previously processed utterances are recalled and recognised with almost the same ease and rapidity as words from the previous clause. This is only possible if they are retained in short-term memory. Third, in most modern discourse processing theories - at least the symbolic, non-connectionist ones that I am following here - it is assumed that the accumulated gists, as it were, of recently processed MRs are kept in an activated state in representations known as *situation models* (van Dijk and Kintsch 1983) or *mental models* (Johnson-Laird 1983). These are cognitive representations "of the events, actions, persons, and in general the situation, a text is about" (van Dijk and Kintsch 1983: 337), which play a crucial role in on-going decoding (cf. e.g. Graesser and Zwaan 1995). As Rinck and Bower (1995) have shown, not only the availability of referents in the situation model as such, but even the imagined spatial distance of objects in the generated model has an effect on processes like the resolution of anaphora.

Second, activated knowledge about the other discourse participants plays a role. This includes assumptions derived from the current perception of their non-linguistic behaviour (e.g. posture, mimics, gesture, cf. Auer 1992: 13); knowledge about more per-

permanent aspects of their persons like gender, age, job, social status etc.; and, again derived from on-going perception, assumptions about their temporary states of minds: their hypothetical aims, expectations, hopes, worries, and, most importantly, their hypothetical knowledge states. That discourse is indeed founded on the anticipation of the other participants' activation states (cf. Falkner 1997: 86) can be gleaned from such simple linguistic phenomena as the use determiners, which mark various degrees of accessibility of discourse referents (Ariel 1990, Jucker this volume). It is this anticipation which warrants the "presumption of relevance" (Sperber and Wilson 1995: 156ff), i.e. the unshakable trust on the hearer's side that the speaker intends to communicate something that is relevant for him or her.

Third, I have repeatedly used the adjective *hypothetical* in the previous paragraph, because what I had in mind were the aims, intentions, knowledge states etc. imputed by each of the participants to the others. In addition, understanding is affected by the interpreters' own goals and expectations in a given conversation. While Falkner (1997: 87) argues that hearers generate expectations in response to their assessment of context and cotext, my position is that expectations are themselves an integral part of the mental state that is referred to as *context* here.

Expectations can precede an utterance, they can be triggered directly by parts of the utterance (e.g. story prefaces), by the situation, or by schemata about events and about text structures stored in long-term memory and activated by concepts that are evoked by the phonetic event (cf. van Dijk and Kintsch's (1983: 235ff.) *superstructures).* The idea that expectations affect discourse understanding during the comprehension process has been supported by numerous psycholinguistic experiments (cf. the survey in van Dijk and Kintsch 1983: 52-59) and neuropsychological studies using the ERP (event-related brain potential) technique (St. George et al. 1994). On the other hand, there is a growing amount of recent research, produced especially in the wake of Kintsch's influential construction-integration model (Kintsch 1988), which suggests that expectation-guided top-down processing is at least not a necessary precondition for successful understanding (e.g. Tapiero and Denhiere 1995).

Fourth, the activated knowledge of the situation in which the exchange takes place must be taken into consideration. Like those mentioned before, this is of course a well-known context factor traditionally referred to as *situational context* or *context of situation* (cf. e.g. Brown and Yule 1983: 35ff). Adding the twist of *activated knowledge of* underscores not only the cognitivist but also the subjectivist nature of context. As stressed by Falkner (1997: 87) and van Dijk (1999: 124), what determines comprehension is not the situation as such but the participants' subjective perception and interpretation of the situation.

Closely related to this is the fifth type of activated knowledge: knowledge about the speech event in which one participates. While the term *situation* covers aspects of the physical setting (mainly time, location, persons and objects involved), the notion of *speech event* has to do with functions and meanings of situations. Together with the activated knowledge about the situation and the other discourse participants the knowledge about the speech event constitutes the cognitive counterpart to what has been termed the *social context* (e.g. Kintsch and van Dijk 1983: 6ff.) - i.e. the interpre-

tation or construction of a situation by the participants as social members (van Dijk 1981: 224f). This includes activated knowledge of settings and their social implications (e.g. pub, church, theatre, classroom); of the participants' social roles in the present discourse (e.g. doctor, teacher, salesman etc.); of their social relations to each other (friend, family, relative, teacher, boss, casual acquaintance, stranger etc.); and of the kind or genre of the speech event (oral exam, casual chat, public debate etc.) and its social implications (cf. Zwaan 1994). Not surprisingly, these aspects have attracted most attention among ethnographers and sociologists and are encapsulated in notions like Gumperz's *activity type* (1982: 131) and Goffman's *framing* (1974).

Sixth, even the simplest acts of interpretation require the activation of general world knowledge. In contrast to the types of knowledge mentioned so far (with the exception of knowledge about the other participants' characters etc.), world knowledge is not more or less directly activated by the perception of the on-going speech event but retrieved from long-term memory in response to the current perceptual input. It is recruited to assist in the construction of MR, for example, to draw inferences, resolve ambiguities or fill in pragmatic presuppositions.

In sum, the knowledge activated during the construction of MR is basically of six types (cf. Figure 2): knowledge about recently processed mental representations (RPMRs), the processor's expectations and goals (E/G), the other participants (Ps), the situation (Sit), the speech event (SpE), and general world knowledge (WK).

2.4 Emotional states

Language processing is not only influenced by cognitive factors (in the narrow sense of 'knowing' and 'finding out') but also by emotional ones. This tends to be overlooked by linguists because of their preoccupation with the cognitive and social functions of communication. The emotional factor whose power to influence any kind of cognitive activity is most well-known is probably motivation (cf. Eysenck and Keane 1995: 75, 200). If people have an intrinsic motivation for processing an utterance, such as being interested in the information given, then they will pay attention to it and process it with more depth than when they are forced to listen to someone speaking.

All emotions - both basic ones like anger, fear or joy and secondary ones like pride or jealousy - are likely to affect comprehension. For instance, when you are angry you will be more likely to interpret an utterance as a criticism or complaint than when you are happy. And whether you interpret an utterance as an encouraging or disappointing piece of information may crucially depend on whether you are in a self-confident mood or feeling low. While emotional states may rarely reach the level of conscious awareness, it still seems plausible that they have an impact on the cognitive processing of linguistic utterances.

Our decoding model can now be extended as shown in Figure 2. The figure shows that the six types of activated knowledge (AK) - which of course all interact with each other - and the emotional state (ES) of the hearer influence the generation of a mental representation prompted by a phonetic event. AK and ES influence each other as well.

At the same time, the mental representation leads to a revision, a kind of updating, of the activated knowledge and the emotional state. It can change your knowledge about every single one of the six aspects. And it may affect your mood: a good piece of news will have a different effect on your emotional state than a bad one. This indicates that it is not the case that a given context is waiting for an utterance and determines its interpretation, as suggested by many context models (e.g. Brown and Yule 1983: 27ff.). Rather - and this is indicated by the two-arrowed lines connecting MR and AK and MR and ES - 'text' and context have a constant reciprocal influence on each other (cf. Auer 1992: 21, Sperber and Wilson 1995: 38ff., 133ff., van Dijk 1999: 130, 132f.).
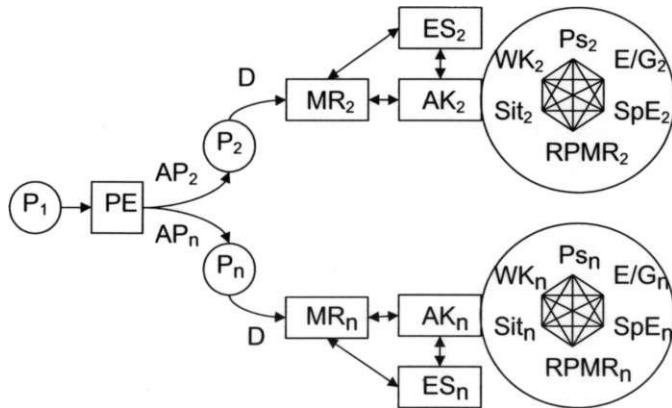

Figure 2: The influence of activated knowledge and emotional states on the construction of mental representations (and vice versa)

2.5 Total cognitive environment

Activated world knowledge affects comprehension. As mentioned before, world knowledge is stored in long-term memory, most likely in the form of knowledge structures referred to as *schemata, scripts, frames* and *scenarios* (see e.g. Brown and Yule 1983: 236ff. or Eysenck and Keane 1995: 257ff.). Therefore, long-term memory is also a crucial context factor. The content, the structure and the limits of people's long-term memories impose restrictions both on the kind and the amount of knowledge they can activate, and thus on the mental representations they generate in response to phonetic events. Since no two persons have identical long-term memories - not even identical twins sharing their whole lives - one can conclude that it is impossible for two persons to construe identical mental representations in response to one phonetic event uttered by the same speaker in the same situation. This squares with the claim that there can never be complete identity between what is meant by the speaker and understood by the hearer (Falkner 1997: 2f.).

The notion of long-term memory falls short of capturing the kind of potential contextual influence that I have in mind here, however. My target notion is wider, something like 'what a person can think of and what a person can infer without engaging in attention-demanding, i.e. non-automatized, cognitive processes'. This idea is not strictly tied to the function of information storage traditionally attributed to memory, but includes other basic cognitive abilities like spatial orientation, comparing, recognising simple analogies etc. The term best suited for capturing this idea is Sperber and Wilson's *total cognitive environment* of an individual, which they define as "the set of all the facts [including assumptions, HJS] that he can perceive or infer: all the facts that are manifest to him" (1995: 39). A fact or assumption is manifest to an individual "if he is capable [...] of representing it mentally and accepting its representation as true or probably true" (Sperber and Wilson 1995: 39).

2.6 Total cultural environment

Not even a person's long-term memory and total cognitive environment are autonomous. As was perhaps most forcefully argued by Assmann (1997), what people are able to recall and think of is influenced by the social groups and cultures in which they have a share. I am using the plural *cultures* quite deliberately here, since every human being is a member of a whole array of cultures of different types: of national, regional, local cultures; of political, religious, ethical, moral cultures; of linguistic cultures or speech communities; of art, lifestyle, professional, company, peer-group cultures; of male or female cultures, and of many more. Cultures are knowledge and belief systems shared by groups (of whatever size) of people (of whatever similarities). On this understanding, even families can and should be regarded as having their own cultures. For example, if all members of the family know that supper is usually eaten at 7 pm and everybody is expected to show up, then this is clearly part of the family culture.

Even card-carrying anti-Whorfians may find the idea convincing that people do not accumulate and structure their long-term memories from their own individual resources but under the influence of the cultures they are exposed to. My moral standards, my political beliefs, my feelings about art, my world knowledge and, if Whorf is right, the conceptual system that is fossilised in the language(s) I speak - all of this is to some extent shaped by the cultures in which I feel embedded and to which I have access. In Gumperz' words: "what we perceive and retain in our mind is a function of our culturally determined predisposition to perceive and assimilate" (1982: 12).

The cognitive environments of individuals are thus affected by what can analogously be called *cultural environments.* Conceptually this term is very similar to Assmann's (1997) notion of *cultural memory,* which he regards as the "outer dimension of human memory". Cognitive and cultural environments interact with each other in an intricate manner. On the one hand, the individual cognitive environments of the members of a culture are shaped by the collective knowledge, beliefs, traditions etc. On the other hand, cultural environment can be considered as the collective long-term memory of a group: *culture* is what a group of somehow similar people know and can possibly think

of and infer. People's individual cognitive environments are thus like windows to cultural environments.

That the cultural environments of people have an effect on their understanding of utterances is no less than a truism today. The dangers and intricacies of inter-cultural or cross-cultural communication are gaining attention with the same pace as international and global communication is becoming easier than ever. But even local and other kinds of 'low-level' cultures have similar effects. In the seven-o'clock-supper family, for example, the simple statement *It's seven o'clock* would be understood as a call to assemble for supper because of the shared knowledge about family routines. For someone who is not familiar with the family culture, say a friend or a foreign exchange student, the intended meaning of the statement may well remain obscure.

We have now arrived at the final version of a model of the factors that can influence the decoding and interpretation of utterances (see Figure 3). Since models are always simplified abstractions from reality, it is not surprising that Figure 3 neglects a number of possible relations between sub-processes of communication. For example, the fact that linguistic knowledge is also stored in long-term memory and must be activated to carry out decoding is not represented by an arrow reaching from TCoE to D.

3. Conclusion: What is context?

Apparently, the conception of context outlined here is a cognitivist one. Its essence is that context resides neither in the surrounding text nor in the situation, but in the mind. This view of context has a number of important implications:

Context is unitary: During language processing, the cognitive system does not distinguish between contextual information carried over from previous utterances, contextual information retrieved from the current perception of the situation and contextual information retrieved from long-term memory (cf. Blakemore 1992: 27).

Context is subjective: Neither the current perceptive input nor the cognitive and cultural environments of different persons can ever be identical. As a result all individuals involved in an act of communication bring their own context to bear on their interpretative efforts, and this in turn implies that the mental representations construed by different people in response to one utterance can never be identical.

Context is dynamic and reflexive: Context does not precede and determine decoding but is constructed in interaction with it. Vice versa, text is not only interpreted with the help of context, but leaves its mark on the latter. The interaction between text and context is characterized by a constant reciprocal updating of the mental representation of the text under construction on the one hand, and the context on the other.

Context is potentially infinite: The only limit to the amount or kind of knowledge that can have some bearing on the mental representation a person construes in response to a given utterance is his or her total cognitive environment. This, as we all know, is potentially infinite. Since hearers can never activate their total cognitive environment for an act of comprehension, the crucial question is how they select and activate those

pieces of information that are relevant in an actual decoding situation. This, however, takes us beyond the limits of this paper because it concerns *actual contexts* rather than the *potential context.* Readers interested in the puzzling question of actual context selection are referred to Sperber and Wilson's Relevance Theory, which provides the most elaborate and ingenious answer suggested so far.
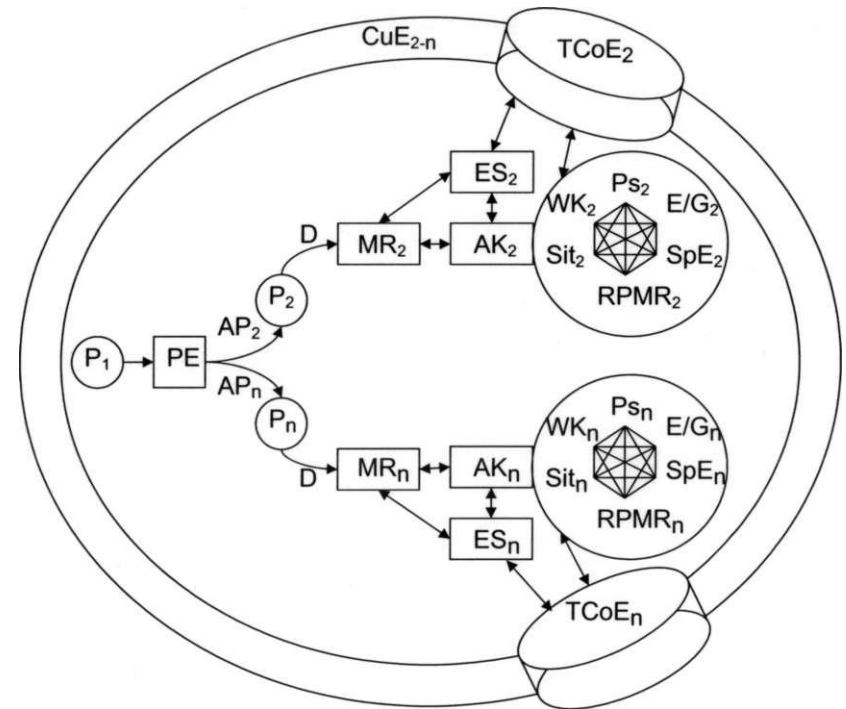

Figure 3: A model of the context factors influencing comprehension

P = Participant, PE = Phonetic event, AP = Auditory perception, MR = Mental representation, D = Decoding, AK = Activated knowledge, ES = Emotional state, WK = World knowledge, Ps = Participants, E/G = Expectations and goals, SpE = Speech event, RPMR = Recently processed mental representations, Sit = Situation, TCoE = Total cognitive environment, CuE = Cultural environment

The potential relevance of the present paper could lie in three modest achievements: the integration of context factors in a processing model of understanding; the inclusion of emotional states as potential context factors; and the emphasis on the unitary conception of context derived from the cognitivist conception. I have suggested that context is mental activity (triggered by the perception, interpretation and decoding of a phonetic event), which aims at processing information derived from the subjective

perception and interpretation of previous utterances and the speech event, and information retrieved from long-term memory. This mental activity is influenced by the emotional state and the cultural environments of the participant and the resulting social interpretations, and activated to the extent that it relates to the mental representation under construction.

References

Ariel, Mira (1990), *Accessing NP antecedents*, London: Routledge.

Assmann, Jan (1997), *Das kulturelle Gedächtnis, Schrift, Erinnerung und politische Identität in frühen Hochkulturen*, München: Beck.

Auer, Peter (1992), "Introduction: John Gumperz' approach to contextualization". In: Peter Auer and Aldo di Luzio, eds., *The contextualization of language*, Amsterdam etc.: Benjamins, 1-37.

Brown, Gillian and George Yule (1983), *Discourse analysis*, Cambridge etc.: CUP.

Coulthard, Malcolm (1992), "Forensic discourse analysis". In: Malcolm Coulthard, ed., *Advances in spoken discourse analysis*, London – New York: Routledge, 242-258.

Falkner, Wolfgang (1997), *Verstehen, Mißverstehen und Mißverständnisse. Untersuchungen an einem Korpus englischer und deutscher Beispiele*, Tübingen: Niemeyer

Fletcher, Charles R. (1981), "Short-term memory processes in text comprehension". *Journal of verbal learning and verbal behavior* 20, 546-574.

Glanzer, Murray, Beth Fischer and David Dorfman (1984), "Short-term storage in reading". *Journal of Verbal Learning and Verbal Behavior* 23, 467-486.

Goffman, Erving (1974), *Frame analysis*, Harper Colophon Books.

Graesser, Arthur C. and Rolf A. Zwaan (1995), "Inference generation and the construction of situation models". In: Weaver, Mannes and Fletcher (1995), 117-139.

Gumperz, John (1982), *Discourse strategies*, Cambridge: CUP.

Hymes, Dell H. (1967), "Models of the interaction of language and social setting". *Journal of social issues* 23, 8-28.

Kintsch, Walter (1988), "The role of knowledge in discourse comprehension: a construction-integration model". *Psychological review* 95, 163-182.

Johnson-Laird, Phillip N. (1983), *Mental models*, Cambridge: CUP.

Jucker, Andreas (this volume), "Reference assignment as a communicative task: Differences between native speakers, ESL- and EFL-speakers."

Langacker, Ronald W. (2001), "Discourse in Cognitive Grammar". *Cognitive Linguistics* 12, 143-188.

Rinck, Mike and Gordon H. Bower (1995), "Anaphora resolution and the focus of attention in situation models". *Journal of Memory and Language* 34, 110-131.

Sperber, Dan and Deirdre Wilson (1995), *Relevance. Communication and cognition*, 2nd ed. Oxford: Blackwell.

St. George, Marie, Susanne Mannes and James E. Hoffman (1994), "Global semantic expectancy and language comprehension". *Journal of Cognitive Neuroscience* 6:1, 70-83.

Tapiero. Isabelle and Guy Denhière (1995), "Simulating recall and recognition using Kintsch's Construction-Integration model". In: Weaver, Mannes and Fletcher (1995), 211-232.

Van Dijk, Teun (1981), *Studies in the pragmatics of discourse*, The Hague etc.: Mouton.

Van Dijk, Teun (1999), "Context models in discourse processing". In: Herre van Oostendorp and Susan R. Goldman, eds., *The construction of mental representations during reading*, Mahwah/N.J.: Lawrence Erlbaum Associates, 123-148.

Van Dijk, Teun and Walter Kintsch (1983), *Strategies of discourse comprehension*, New York: AP.

Weaver Charles A. III, Suzanne Mannes and Charles R. Fletcher, eds., *Discourse comprehension. Essays in honour of Walter Kintsch*, Hillsdale N.J/Hove U.K.: Lawrence Erlbaum Associates.