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## 2 **Discourse and the Production** 3 **of Knowledge**

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### 7 **Synonyms**

8 Beliefs; Communication; Discourse; Discourse processing;  
9 Knowledge; Talk; Text

### 10 **Definitions**

11 Social *knowledge* is here defined as the shared, justified  
12 beliefs held by the members of an (epistemic) community.

13 *Discourse* is variously defined as a communicative  
14 event, a form of interaction and as a situated unit of  
15 language use.

### 16 **Theoretical Background**

#### 17 **Introduction**

18 Both on discourse and on knowledge there is a vast  
19 amount of research since classical rhetoric and epistemol-  
20 ogy. Yet, there is as yet not a single monograph that  
21 explores the obvious insight of the fundamental relation-  
22 ship between these two central notions of the humanities  
23 and social sciences, despite the fact that *we acquire most*  
24 *knowledge by text and talk*, and that *in order to produce and*  
25 *understand discourse language users need vast amounts of*  
26 *knowledge*. This article summarizes some of the current  
27 theoretical and empirical studies that have contributed to  
28 this insight, especially in contemporary Discourse Studies  
29 and Cognitive Science.

#### 30 **Discourse Studies**

31 Since the 1960s, the cross-discipline of *Discourse Studies*  
32 has vastly extended our understanding of text and talk in  
33 all disciplines of the humanities and social sciences, and  
34 beyond the psycholinguistics as well as the traditional,  
35 structural, and generative grammars of isolated sentences.  
36 Discourse today is analyzed as a complex, multimodal

object, as a form of social interaction and as 37  
a communicative event in its sociocultural context, man- 38  
aged by socially shared underlying cognitive strategies and 39  
representations – some of which are to be dealt with in this 40  
article (Schiffrin et al. 2001; Van Dijk 2011). 41

#### 42 **The Theory of Knowledge**

Classical as well as much of modern *epistemology* funda- 43  
mentally defines (declarative) knowledge as *justified true* 44  
*beliefs*, with many variations as to the nature and condi- 45  
tions of justification (among a vast numbers of books in 46  
epistemology, see, e.g., Bernecker and Dretske 2000). In 47  
this article, our approach to the theory of knowledge will 48  
be more natural and pragmatic, namely as 49  
a multidisciplinary account of the cognitive, social, and 50  
cultural properties and functions of the shared beliefs of 51  
an (epistemic) community, justified by the variable (epi- 52  
stemic) standards or criteria of that community. This 53  
approach implies that knowledge is both *contextual* and 54  
*relative*: What is assumed to be knowledge now by the 55  
members of an epistemic community maybe seen as mere 56  
or false belief, or as superstition or prejudice, by members 57  
of another community, or by those of the same commu- 58  
nity later. As a practical test, we assume that *beliefs count as* 59  
*knowledge of a community if they are presupposed and taken* 60  
*for granted in the social practices, and hence in the public* 61  
*discourse, of the community*. We here find a first and fun- 62  
damental relationship between discourse and knowledge. 63

The psychological study of knowledge, since the cog- 64  
nitive revolution of the 1960s and 1970s, analyzed knowl- 65  
edge as organized networks of concepts and categories in 66  
semantic memory, and as part of Long-Term Memory, for 67  
instance, in terms of schemas, scripts, and prototypes (for 68  
review, see Wilkes 1997). It did so largely in isolation from 69  
the obvious social psychological insight that most knowl- 70  
edge is not acquired and used by isolated individuals, but 71  
shared by, or distributed over the minds of the members of 72  
a community. 73

Under the influence of the emerging neurosciences in 74  
the 1990s, psychology today is developing new insights 75  
into knowledge defined as an embodied, multimodal sys- 76  
tem “grounded” in various brain regions, such as those 77  
processing vision, movement, and emotion, involved in 78

79 the acquisition and uses of knowledge in the experiences  
80 of everyday life (Barsalou 2008, among many other  
81 papers).

### 82 Discourse Processing

83 It is within this broad, multidisciplinary framework that  
84 we need to account for the cognitive production and  
85 comprehension of discourse, and for the role of knowl-  
86 edge both as a condition as well as a consequence of these  
87 processes (for reviews and introductions on discourse  
88 processing, see, e.g., Graesser et al. 1997, 2003; Kintsch  
89 1998; McNamara and Magliano 2009; Van Dijk and  
90 Kintsch 1983).

### 91 Discourse Production and Knowledge 92 Management

93 Given the multimodal and multilevel nature of discourse,  
94 the production of text or talk is a situated social practice  
95 organized by semiotic (phonological, visual, etc.), syntac-  
96 tic, semantic, pragmatic, and interactional structures  
97 based on various kinds of mental representations and  
98 organized by cognitive strategies that make sure that the  
99 discourse is understandable, well-formed, meaningful,  
100 appropriate, and efficient in its communicative situation  
101 (despite the vast literature on discourse processing, there  
102 are hardly specialized monographs focusing on the *pro-*  
103 *duction* of discourse).

104 At all these levels of discourse production, first of all,  
105 socially shared *knowledge of the language*, consisting of the  
106 lexicon, the grammar, as well as the rules of discourse,  
107 interaction and context, obviously plays a central role. At  
108 the same time, language users need to activate and apply  
109 their *knowledge of the world*, that is, their general, socially  
110 shared knowledge about the objects, people, actions,  
111 events or situations talked or written about (for references,  
112 see below).

113 Given the shared nature of social knowledge of the  
114 world, as *Common Ground* (Clark 1996), language users  
115 need not express all information in discourse they may  
116 assume can be inferred by the recipients from the knowl-  
117 edge they have in common with the speaker or writer. In  
118 other words, *discourse is essentially incomplete*, because  
119 many of the propositions that define its local and global  
120 meaning and coherence are left implicit in the process of  
121 production.

122 Despite the vast amount of knowledge language users  
123 of the same community have in common, there are obvi-  
124 ously personal and social differences as to the knowledge-  
125 ability or the expertise of individual language users.  
126 Hence, speakers and authors need to contextually adapt  
127 this knowledge management during discourse production

128 to their assumptions about the knowledge of the recipi-  
129 ents, or the lack of knowledge of new members of the  
130 epistemic community (children, students, foreigners,  
131 etc.), as is also the case in the popularization of science.  
132 For didactic, persuasive, or emotional reasons, speakers  
133 may of course repeat some information they know recipi-  
134 ents might or should already have. And conversely,  
135 recipients may be manipulated or otherwise abused if the  
136 speaker presupposes knowledge they do *not* have – but still  
137 is taken for granted indirectly, even when in fact the beliefs  
138 are false.

139 Further dependent on many contextually variable  
140 strategies and constraints, the general pragmatic-  
141 epistemic rule of discourse production is that speakers or  
142 writers assert propositions they assume recipients do not  
143 yet know and cannot infer themselves from their own  
144 knowledge. This is at the same time the basic condition  
145 of (new) knowledge production as well as of knowledge  
146 distribution and reproduction in the community.

### 147 Context Models

148 Language users are only able to epistemically adapt their  
149 text or talk to the recipients if they know what the recipi-  
150 ents know. Such assumptions are part of their subjective  
151 representation of recipients and other relevant aspects of  
152 the communicative situation, called their *context model*,  
153 stored in episodic memory, part of Long-Term Memory  
154 (Van Dijk 2008, 2009). A dynamically changing context  
155 model controls the many variable aspects of discourse that  
156 make sure the discourse (fragment) is communicatively  
157 appropriate, such as its genre, style, register, and topics.  
158 Such a context model consists of a relatively simple  
159 schema with categories such as Setting (Place, Time),  
160 current Social Action, as well as the Participants (and  
161 their current social identities, roles, and relations, and  
162 their current cognitive properties, such as their goals and  
163 knowledge, as well as ideologies if they speak as group  
164 members).

165 Current multimodal knowledge theories suggest that  
166 these context models, defined as models of communica-  
167 tive experience just like any other experience, may well  
168 have a multimodal nature, featuring auditory aspects of  
169 speech (such as a special tone, stress, or intonation) or the  
170 environment (e.g., noise), visual information about par-  
171 ticipants and the setting, body movements of interaction  
172 (gestures, position), as well as opinions and emotions  
173 about the participants, the topics of discourse, or the  
174 whole speech event (Barsalou 2008).

175 Central in the context model is a *knowledge device* that  
176 dynamically and ongoingly hypothesizes what recipients  
177 already know or may infer from their knowledge, so that

178 the speaker can strategically adapt the discourse to this  
179 assumed knowledge of the recipients, by being more or  
180 less explicit or implicit, and manage what information  
181 must be asserted and what information may be  
182 presupposed, both locally within or between sentences,  
183 as well as globally as in the discourse as a whole. *One*  
184 *powerful strategy is that if recipients are members of the*  
185 *same knowledge community, recipients are assumed to have*  
186 *the same general knowledge as the speaker or author, except*  
187 *new knowledge the speaker or author has recently acquired*  
188 *by reliable observation, sources (speakers, media), or*  
189 *inference.*

### 190 **Discourse Comprehension**

191 Discourse comprehension has many properties in com-  
192 mon with discourse production, and is a process that is  
193 based on (more or less) the same knowledge of the lan-  
194 guage and the world as they are used and applied by  
195 speakers and writers (Kintsch 1998; Britton and Graesser  
196 1996). The obvious difference is that speakers and writers  
197 in principle know what they mean and want to convey,  
198 and need to find an appropriate discursive expression to  
199 these meanings, whereas recipients start with this discurs-  
200 ive expression and need to figure out what the speaker or  
201 writer means.

202 Recipients have their own context model of the com-  
203 municative situation, with their own information and  
204 opinions about the setting, the participants (and their  
205 identities, roles, relations, goals, knowledge, etc.) and the  
206 ongoing social action. Discrepancies with the context  
207 model of the speaker or writer, for instance, about the  
208 goal of the communicative interaction, may thus lead to  
209 communicative conflicts.

210 Especially relevant for the topic of this article is the  
211 role of knowledge in the construction of the meaning of  
212 the discourse (see Kintsch 1998; Van Dijk and Kintsch  
213 1983). Since speakers or writers assume recipients are  
214 able to infer much information from their (shared) social  
215 knowledge, this is precisely what recipients (have to) do:  
216 Together with the information derived from what is  
217 explicitly expressed in discourse, they ongoingly must  
218 generate at least those inferences from their knowledge  
219 that are needed to produce a meaningful and coherent  
220 semantic interpretation of the discourse (Graesser and  
221 Bower 1990). Typically, they may thus generate plausible  
222 causes or consequences of events or reasons of action, or  
223 fill in many details of socioculturally well-known episodes,  
224 such as going to work or to school, shopping, eating in  
225 restaurants, birthday parties, or demonstrations, among  
226 many others. Obviously, the nature and amount of these  
227 inferences crucially depend on the abilities (literacy, etc.),

knowledge, goals, or tasks of the recipients (for details, see, 228  
e.g., Graesser and Bower 1990). 229

### 230 **Situation Models**

231 This knowledge-based process of discourse comprehen-  
232 sion appears to go far beyond the mere interpretation of  
233 words, clauses, or sentences and even beyond the con-  
234 struction of locally and globally coherent discourse mean-  
235 ings. Indeed, the goal of discourse comprehension is not  
236 merely to understand the discourse itself, but rather what  
237 the discourse is *about*: what it tells us about some event or  
238 situation or the world. It is therefore assumed that besides  
239 construing a semantic representation of the discourse (its  
240 *intension*), language users also construe a subjective, *mul-*  
241 *timodal mental model of these events, situations, or episodes,*  
242 referred to or spoken about (its *extension*). In other words,  
243 to understand discourse means to be able to construe  
244 a mental model for it. This model may feature the visual,  
245 auditory, sensorimotor, emotional, and other modal  
246 aspects that are associated with the way recipients imagine  
247 or simulate the event talked or written about (instead of  
248 mental models, Barsalou (2008) speaks of simulations to  
249 refer to situated comprehension and experiences).

250 As is the case for (pragmatic) context models and  
251 other models of personal experience, these (semantic)  
252 models of events or situations are also stored in Episodic  
253 Memory (for details on mental models, see Johnson-Laird  
254 1983; Van Dijk and Kintsch 1983; Van Oostendorp and  
255 Goldman 1999).

256 As suggested, general, sociocultural knowledge plays  
257 a central role in the construction of this mental model,  
258 together with the (new) information of the discourse, and  
259 possibly with information derived from old mental  
260 models (previous experiences, previous discourses), for  
261 instance, by supplying missing inferences about condi-  
262 tions, consequences, participants, details, and other plau-  
263 sible elements of the situation.

264 Note that the way knowledge is (partly) activated and  
265 applied in the construction or updating of such models of  
266 the event or situation referred to is controlled by informa-  
267 tion in the pragmatic context model. In other words,  
268 different recipients may interpret the same discourse in  
269 a different way by constructing different (semantic) situ-  
270 ation models. And conversely, for the same contextual  
271 reasons, different readers may also acquire different  
272 (new) knowledge from the same discourse, depending  
273 on their previous knowledge, interest, motivation, and  
274 current goals.

275 **Knowledge Production**

276 Crucial at this point is not only that shared knowledge is  
277 strategically (partly) activated to construe semantic repre-  
278 sentations and mental models, but also may be  
279 transformed (formed, changed) by discourse. Indeed,  
280 information that is not implied or presupposed by text  
281 or talk may be used to build and socially distribute mental  
282 models about unknown events, as is the case in everyday  
283 personal storytelling as well as in news reports.

284 When repeated, such discourses and their mental  
285 models may be generalized and abstracted from so as to  
286 form more general knowledge about this type of event. For  
287 instance, news about specific terrorist attacks may be used  
288 to build knowledge and attitudes about terrorism. This is  
289 a special (discourse) way of learning from personal expe-  
290 rience, and a condition for the social reproduction of  
291 knowledge as well as other forms of social cognition (atti-  
292 tudes, ideologies, norms, values) in society.

293 Obviously, besides model-based (i.e., experience-  
294 based) acquisition of knowledge, new knowledge may  
295 also be produced more directly, as is the case in many  
296 forms of pedagogical or expository discourse (Britton  
297 and Black 1985), for instance, by generic descriptions of  
298 events, objects, or phenomena; by definitions of terms; the  
299 use of metaphors; schemas; etc. As is the case for all  
300 discourse, such discourse presupposes the general, shared  
301 knowledge of the community, but strategically expands  
302 this knowledge by various multimodal strategies of knowl-  
303 edge transformation. These may include information  
304 about (a) categorical relationships (such as higher-level  
305 categories or lower-level subcategories), (b) visual or other  
306 perceptual appearances, (c) parts or components, (d) rela-  
307 tionships with other objects or phenomena, (e) functions  
308 or uses, and so on.

309 **Important Scientific Research**

310 Most of the theoretical issues of discourse processing and  
311 the role of knowledge discussed above have been shown to  
312 be empirically warranted by (mostly experimental)  
313 research. Thus, many studies have shown that discourse  
314 comprehension crucially depends on the activation and  
315 application of what is usually called “prior knowledge” –  
316 although such knowledge is not usually precisely defined  
317 (McNamara and Kintsch 1996; see also below).

318 Thus, perhaps trivially, people who know more about  
319 a domain or topic, usually better understand a discourse  
320 about such a topic or domain – if only because they are  
321 able to derive more inferences and hence are able to  
322 construe more detailed mental models of specific events  
323 or new schemas of new, generic knowledge.

But, as is generally the case, both outside as well as 324  
within in the laboratory, *actual knowledge acquisition* 325  
*depends on the structures and strategies of text and context.* 326  
For instance, because of their larger knowledge, experts 327  
may pay less attention to the specific details of text or talk 328  
and hence may hardly do better than nonexperts in spe- 329  
cific tasks, such as recall or recognition. Similarly, if texts 330  
are very explicit they may be less interesting for experts, 331  
and hence they may pay less attention and again recall 332  
fewer details than nonexperts. And in all cases, it depends 333  
on the tasks and hence the goals of the participants: 334  
Someone who must correct the style or translate a news 335  
report may well learn less about some news event than 336  
a reader or a political activist who is specifically motivated 337  
and interested in news about a specific topic or domain. 338

Among the vast number of studies on the role of 339  
knowledge in discourse comprehension and hence on 340  
learning from text, here is a summary of some of the 341  
findings in addition to those that have been mentioned 342  
above (for detail, and further references for each result, see 343  
especially the chapters in Graesser et al. 2003). 344

**Context Variables** 345

- People in general learn more from text when they have 346  
more prior knowledge about the domain or topic of 347  
the text (among many studies, see, also Kendeou and 348  
Van den Broek 2007). 349
- People in general have a memory bias for the infor- 350  
mation with which they agree. However, people with 351  
more knowledge about an issue are able to better 352  
reproduce two sides of a controversial argument. 353
- Experts versus nonexperts (high- or low-knowledge 354  
subjects) learn differently from texts. 355
- People learn more from text when they do so interac- 356  
tively, e.g., by discussion about the text. 357
- More generally, people learn more when they explicitly 358  
(must) think about the way they learn from the text 359  
(metacognition). 360

**Text Variables** 361

- More cohesive, more coherent, more explicit, and 362  
better organized text (e.g., with summaries, headers, 363  
conclusions) generally favor comprehension and 364  
hence knowledge acquisition. 365
- Inaccurate prior knowledge needs to be explicitly 366  
rejected – it is less efficient to simply present correct 367  
knowledge. 368
- Images may help understanding and learning from 369  
text. 370



371 **Combined Text and Context Variables**

- 372 • In general, people learn more from cohesive, more  
 373 coherent, and well-organized text, especially if they  
 374 are less-skilled readers, but the interaction between  
 375 text structure, prior knowledge, and reading ability is  
 376 more complex than that.

377 Unfortunately, most experimental work in the labora-  
 378 tory is focused more on “learning from text” in the narrow  
 379 sense of what (new) information can be recalled, recog-  
 380 nized, reproduced, or applied in specific ad hoc laboratory  
 381 tasks (see also Kintsch 1991, 1998). Socially shared knowl-  
 382 edge, however, should be defined in broader terms, and at  
 383 least involve relatively long-term or even permanent trans-  
 384 formation of our socioculturally shared knowledge as  
 385 members of epistemic communities. Outside educational  
 386 situations (classrooms, exams, etc.), few controlled exper-  
 387 iments offer insight into these long-term constructions  
 388 and transformations of our knowledge. Most likely, such  
 389 new, socioculturally shared, knowledge is acquired and  
 390 integrated within the knowledge system if it is repeatedly  
 391 situationally relevant, namely if it is often presupposed for  
 392 the understanding of public discourse (as is the case for  
 393 our generally knowledge about computers, the Internet,  
 394 and DNA, for instance) and if it is taken for granted in  
 395 other social practices.

396 Most experimental studies on the role of knowledge in  
 397 discourse production and comprehension, or on the  
 398 acquisition of (new) knowledge from discourse, barely  
 399 reflect on the nature, the structure, and the organization  
 400 of knowledge in memory, and how such knowledge is  
 401 changed. In order to examine how exactly people acquire  
 402 knowledge from discourse, we need to know much more  
 403 about how the structures of discourse are related to the  
 404 structures of knowledge, as well as about the many context  
 405 variables that affect this relationship in actual learning and  
 406 the use and reproduction of knowledge in society.

407 **Cross-References**

- 408 ▶ Cognitive Models of Learning  
 409 ▶ Discourse  
 410 ▶ Discourse Processes and Learning  
 411 ▶ Epistemology of Learning  
 412 ▶ Knowledge Acquisition  
 413 ▶ Knowledge and Learning in Natural Language  
 414 ▶ Knowledge Integration  
 415 ▶ Knowledge Representation  
 416 ▶ Learning from Text

- ▶ Memory Structure 417  
 ▶ Mental Models 418  
 ▶ Mental Models in Discourse processing 419

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