

Parallel Session 28: Discourse analysis contributions to PCST study

KNOWLEDGE, DISCOURSE AND SCIENTIFIC COMMUNICATION

Teun A. van Dijk

*Universitat Pompeu Fabra; Barcelona. Rambla 30, 08002 Barcelona. Tel:
+34-93-542-2494. Internet: www.discourse-in-society.org. E-mail:
vandijk@discourse-in-society-org*

Abstract

In this communication we present some fragments of a new, multidisciplinary theory of knowledge as certified shared beliefs of epistemic communities and a typology of knowledge and epistemic communities, including scientific communities and the public as a whole, as a basis for a multidisciplinary study of popularization discourse. Besides transformations between different types of knowledge, popularization also involves recontextualization of knowledge from scientific to everyday knowledge. In a study conducted with Helena Calsamiglia, we analyzed press reports in Spanish newspaper *El País* about the presentation of the completion of the sequencing of the human genome and found that popularization not only features the usual discursive means of new knowledge introduction (such as definitions and metaphors), but also a limited set of fixed categories such as Location, Composition, Type, Size and Number, which link old with new knowledge. It is assumed that these categories are expressions of underlying schemas of knowledge representation.

Keywords: Discourse Analysis, Popularization, Knowledge

Text

Aim

The theoretical aim of this paper is to propose some fragments of a new theory of knowledge and its relations with discourse structures as a basis for new developments in the study of science communication. Its empirical aim is to apply this theory in a study of the popularization discourse in the Spanish press about the international presentation of the first draft of the human genome.

Theoretical framework

The theoretical framework of this research project is multidisciplinary, and involves discourse analysis, cognitive psychology and epistemology and their integration with the study of science communication. Cognitive psychology in the last decades has shown that discourse production and comprehension requires vast amounts of knowledge (Van Dijk & Kintsch, 1983). But it does not provide a general theory nor a typology of knowledge needed to explain which kind of knowledge is needed by and for which language users, as is the case for the knowledge and discourse of scientists, specialized journalists and the public at large in science communication in the press. Similarly discourse

studies of popularization have analyzed some textual structures used in these forms of scientific knowledge transformation and recontextualization, such as denominations, explanations, definitions, denominations and metaphors (Beacco, 1999; Calsamiglia, 2004). However, these studies have not been carried out on the basis of a cognitive psychology of text processing and within a broader theory of knowledge and its uses.

Against this multidisciplinary background, this paper proposes a new framework for the theory of the knowledge-discourse interface and its integration within a theory of science communication. Thus, unlike definitions in classical epistemology, knowledge is not defined in terms of “justified true beliefs” (Bernecker & Dretzke, 2000), but more pragmatically, discursively and socioculturally, namely as the shared beliefs of (epistemic) communities that are certified by the (epistemic) criteria of that community (for details, see Van Dijk, 2003). That is, knowledge is relative to communities, and maybe deemed ‘mere belief’ by other communities, or later by the same community. Besides such a socioculturally relative definition, it is also proposed that we need a typology of knowledge, distinguishing, e.g., between general vs. specific or abstract vs. concrete, various represented in episodic and semantic (social) memory. Since knowledge as defined here is social, it is also proposed to define different ‘scopes’ of knowledge, such as interpersonal, group, national and cultural. Crucial for the interface between knowledge and discourse is the general pragmatic strategy that the knowledge of a K-community is presupposed in the discourses within that community. For communication across community boundaries, special forms of communication and strategies of knowledge transformation are necessary, as is the case in popularization, i.e., between scholars, journalists and the public at large. These strategies are defined in the K-device of the episodic context models that regulate all discourse and communication and that subjectively construct the relevant aspects of the communicative situation.

The Study

In order to examine some of the empirical implications of the theory, a study was carried out with Helena Calsamiglia (Calsamiglia & Van Dijk, 2004), analyzing Spanish press accounts of the announcement of the sequencing of the human genome in June 2000. Forty-two articles were systematically discourse analyzed for their relations between scientific (community) knowledge and everyday commonsense knowledge, and how their structures were involved in such transformation and recontextualization.

Results

Apart from the usual findings in discourse analytical studies of popularization discourse, such as the use of definitions, descriptions, explanations, paraphrases or metaphors, most interesting for our theoretical framework was the systematic *categorical* way in which ‘new’ knowledge was discursively introduced by the journalists. Since new knowledge can only be established by links with ‘old’ knowledge, what happens is that these links are defined in terms of a rather limited *categorical schema*, involving such relationships as Composition, Type, Size, Number, Form, Color, Variation, Generalization, Comparison and Denomination, as in “*The gigantic DNA is composed of millions of small compounds called bases*”, which features the categories

Composition, Number, Size and Denomination. Since these categories appear to be very generally used in definitions and explanations, and hence for the introduction of 'new' knowledge in general, we surmise that they might be part of the very schematic structures of knowledge representation.

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