Textual Relations as Part of Multiple Links Between Text Segments*

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Abstract. Many text planning systems are based on a theoretical linguistic approach which assumes the existence of relations between units of text. The relational approach most extensively used in text generation is the Rhetorical Structure Theory (RST, Mann and Thompson 1987). The phenomenon of multiple relations, i.e. the fact that in natural language texts we often find more than one relation holding between two text units, has so far not been given sufficient consideration. In this paper we try to show how a subset of multiple relations can be described, giving special attention to a subtype of discourse structure relations, the textual relations. As will be seen in section 3, we adopt this notion from a classification of discourse structure relations\(^2\) as proposed in Maier and Hovy (1991).

1 Introduction

Many text planning systems are based on a theoretical linguistic approach which assumes the existence of relations between units of text. The most extensively used relational approach in text planning and text generation is Rhetorical Structure Theory (RST, see Mann and Thompson 1987), which has been used for a number of systems (see section 2). The phenomenon of multiple relations, i.e. the fact that in natural language texts we often find more than one relation holding between two text units, has so far not been given sufficient consideration.

In this paper we try to show how a subset of multiple relations can be described, giving special attention to a subtype of discourse structure relations, the textual relations. As will be seen in section 3, we adopt this notion from a classification of discourse structure relations\(^2\) as proposed in Maier and Hovy (1991).

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\(^2\) In the following we use the term discourse structure relation to refer to phenomena which have been addressed previously under the terms rhetorical relations (e.g. Mann and Thompson 1987), coherence relations (e.g. Hobbs 1979), or conjunctive relations (e.g. Martin 1992).
While the work discussed there focuses on the top level classification of a collection of discourse structure relations, this paper wants to contribute to a better understanding of textual relations — and here again only to a subclass of these relations — since textual relations can be considered the least intuitively clear subset. In this paper we illustrate the function of textual relations in discourse, giving examples from a corpus of business texts. In doing so we try to explain various textual relations leaving a formal specification to future research.

After describing the nature of these textual relations we show in chapter 5 how these relations can be generated by extending a text planning system which has been developed for the production of business texts (see Hovy et al. 1992).

2 State of the Art Approaches in Text Planning and Text Structuring

Some of the first approaches to text planning, as e.g. McKeown (1985), Paris (1987), and McCoy (1987) were based on schemata. Schemata are recipe-like instructions describing what text units a specific genre consists of and in which order they usually appear. It was soon noted that systems based only on the schematic approach are unable to reason about the structure of the text, i.e. about the order in which the text units appear in the text and about the way they are linked. An essential part of the problem is that goals are typically compiled out of such schemata. What remains is a conventionalized sequence of text segments, with their potential semantics described by means of predicates. Moore (1989, p. 63) gives an example for a case where for exactly this reason a schema-based approach leads to problems for generating user-sensitive responses; she shows that in cases where the user does not understand a system-generated explanation a schema-based system is not able to recover due to its inability to determine which part of the explanation did not have the intended effect on the user. Therefore, the re-generation of a new explanation to achieve that communicative goal may be impossible.

A solution was seen in the use of relational approaches for discourse structuring. Such approaches, most notably RST (Mann and Thompson 1987), are based on the assumption that coherence in texts is established by means of semantic and/or pragmatic links which exist between two or more units of text (i.e.

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3 At this point a disclaimer has to be made: It is clear that as long as formal definitions for textual relations are lacking, this study suffers from the same difficulties which have been also pointed out for RST relations: the single relations are underspecified to a degree that analyses of the same text done by different persons result in different structures (for possible sources of multiple RST analyses see also Mann and Thompson 1987, p. 26-30). Another recent study on text segmentation (see Passoneau and Litman 1993) shows that not much consistency between various text analysers exist. This is in contrast to what has been claimed in Mann et al. (1983) (cited after Grosz and Sidner 1986, p. 177). If already the segmentation of texts is not unique the same result can be expected for a relational analysis which consists of text segments augmented by discourse links.