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ABSTRACT Rhetorical Structure Theory (RST) is a theory of text organization that has led to areas of application beyond discourse analysis and text generation, its original goals. In this article, we review the most important applications in several areas: discourse analysis, theoretical linguistics, psycholinguistics, and computational linguistics. We also provide a list of resources useful for work within the RST framework. The present article is a complement to our review of the theoretical aspects of the theory (Taboada and Mann, 2006).

KEY WORDS: *argumentation, coherence relations, computational linguistics, corpus analysis, cross-linguistic discourse analysis, Rhetorical Structure Theory (RST)*

1. Introduction

Part of the success of Rhetorical Structure Theory (RST) over the years and its currency today is that it has been applied to different areas of science. From its very inception, it was conceived as a way to characterize text and textual relations for the purpose of text generation. RST continues to see success in that area and others within computational linguistics. It has also been applied to such diverse fields as legal contracts or the teaching of writing.

This article summarizes, as briefly as possible, some of the areas in which RST has been applied, including work carried out in other languages and in other media, such as dialogue or multimedia. The article is a follow-up to our discussion of theoretical aspects of RST (Taboada and Mann, 2006). In the first article, we discussed some of the criticisms and complications that have come into view as a result of performing RST analyses, and addressed issues concerned with how to perform analysis, from unit division to which relations to use. This article focuses on applications, and it also includes an Appendix with further

resources. The bulk of the article is in Section 2, where we discuss applications. Section 3 finishes with conclusions. The Appendix contains a number of resources that we believe will be useful to researchers who wish to work with RST.

The present article does not provide an introduction to RST. For more detail on the tenets of RST, the reader is encouraged to consult the original papers (Mann and Thompson, 1987, 1988), other summaries (Bateman and Delin, 2005; Taboada and Mann, 2006; Thomas, 1995), or the RST website (Mann, 2005).

2. Areas of application

2.1. COMPUTATIONAL LINGUISTICS

RST has been applied in a large number of computational applications. One could in fact assert that part of its appeal and success has been that it lends itself well to computational implementation. From the beginning, it was implemented at the Information Sciences Institute of the University of Southern California as part of the Penman text generation system and related systems (Hovy, 1993; Hovy et al., 1992; Mann, 1983a, 1983b).

Applications in computational linguistics are numerous: generation, parsing, summarization, argument evaluation, machine translation, and essay scoring. The most frequent use has been in Natural Language Generation. There are a large number of projects that have used RST relations, or similar relations,[2] as part of text planners and discourse modules. Hovy (1993) provides a summary of early work on generation. One of the applications described there was an interface to a database with information about ships and their positions. The task involved converting rhetorical relations into text structure plans (Sacerdoti, 1977). Other early work is collected in Dale et al. (1990, 1992) and Horacek and Zock (1993).

The types of text generated include instruction manuals of different types (Rösner and Stede, 1992; Vander Linden and Martin, 1995; Wahlster et al., 1991), administrative forms (Not and Stock, 1994), user documentation (Hartley and Paris, 1997), descriptions of tourist sights (Krifka-Dobes and Novak, 1993), and descriptions of concepts (Zukerman and McConachy, 2001), which are all monologic discourse types. Interactive dialogue has also been addressed, mostly in instructional texts: explanatory discourse about electronic circuits (Cawsey, 1990), advisory dialogues (Moore and Paris, 1993), and dialogue interaction with a database (Fischer et al., 1994). The ILEX project[3] generated user-tailored descriptions of museum objects (Oberlander and Mellish, 1998; O'Donnell et al., 2001).

Texts generated can be in English, in other languages, such as French (Kosseim and Lapalme, 1994, 2000) and Japanese (Ono et al., 1994), or in multiple languages at the same time (Bouayad-Agha, 2000; Delin et al., 1994; Rösner and Stede, 1992; Scott and de Souza, 1990). RST is used not only to

generate coherent text with the appropriate discourse markers (Grote et al., 1997b; Scott and de Souza, 1990), but also to generate the appropriate intonation in speech synthesis (Grote et al., 1997a).

Despite this success, some critics have pointed out that rhetorical relations by themselves are not sufficient for text generation. Kittredge et al. (1991) discuss the need for domain communication knowledge to generate texts in restricted subject domains. Domain communication knowledge is knowledge about how to communicate facts and express intentions in a particular domain. We believe that this type of knowledge may be captured by information about a text's holistic structure and expressed as knowledge about a particular genre (Taboada, 2004a). Kittredge et al. (1991) discuss specific problems of integrating domain communication knowledge into text generation using RST. In particular, they discuss weather reports and summaries of employment statistics. Manual RST analyses of those show that the Joint schema needs to be applied frequently. Since Joint is a schema, not a relation, there are no conditions on its nucleus that can be used to create a planning operator. However, Kittredge et al. point out that there are clear domain-specific conditions on those applications of Joint. Similarly, problems surface with strict adjacency constraints (although we believe those constraints do not need to be strict), and with nucleus-satellite orderings and growth points (Hovy, 1990) that are domain-specific. The very reasonable proposal by Kittredge et al. is to combine general rhetoric knowledge, as presented by RST, with specific knowledge about how rhetoric is presented in each domain.

Text parsing using RST has also been approached, although not as enthusiastically. Marcu (1997b) presented an algorithm to parse the discourse structure of texts, using discourse markers as indicators of relations. Corston-Oliver (1998) included other sources of information: whether the span in question is a main, coordinate, or subordinate clause; position of clause (main-subordinate or subordinate-main); presence of certain adverbs; presence of pronouns; polarity of the clause, etc. Le and Abeysinghe (2003) combine discourse markers, syntactic relations, and cohesive devices. Schilder (2002) uses discourse markers and position, to parse discourse structure of a slightly different form, using Segmented Discourse Representation Theory (Asher, 1993; Asher and Lascarides, 2003). Reitter (2003a, 2003b; Reitter and Stede, 2003) uses cue phrases, part-of-speech tags, and lexical chaining in a machine-learning method with Support Vector Machines (Vapnik, 1995) to parse German text, and Pardo and others are developing a Brazilian Portuguese discourse parser (Pardo et al., 2004).

Some of the work in text parsing has led to further applications, among them text summarization. Marcu (1997a, 2000) has applied his own RST parsing algorithm to summarize text. The principle behind summarization is that satellites in certain relations can be omitted, an idea already proposed by Sparck-Jones (1995). The nuclei are then joined to produce a shorter version of the text. Variations of the summarization methods exist (Alonso i Alemany and Fuentes

Fort, 2003; Corston-Oliver, 1998; Eklund and Wille, 1998; Hachey and Grover, 2004; O'Donnell, 1997; Ono et al., 1994; Otterbacher et al., 2002; Pardo and Rino, 2002; Rino and Scott, 1996; Teufel and Moens, 2002), some of them including multi-document summaries (Radev, 2000), an application for which Radev and colleagues (Radev, 2000; Zhang et al., 2002) have developed a related theory, Cross-Document Structure Theory (CST). CST relations are very similar to RST relations, the main difference being that they hold across texts rather than within a text. For that reason, author intentions are not part of the definition of a relation. An annotated corpus of relations using CST is described in Radev et al. (2004).

Most of the summarizers are for English, with two exceptions: Rino, Pardo and colleagues have developed a summarizer for Brazilian Portuguese (Pardo and Rino, 2001, 2002; Rino et al., 2004), and Ono, Sumita et al. for Japanese (Miike et al., 1994; Ono et al., 1994; Sumita et al., 1992).

Still within summarization, but with a different approach, Williamson (2000) created rules to extract sentences from texts, as a sort of summary. She studied literary studies articles about the character of Molly Bloom in James Joyce's *Ulysses*. She used RST to code sentences, adding a few new relations. RST relations were combined with other measures, such as bigrams and sequence of RST relations in a text.

Related to summarization is indexing and information extraction. In one project, documents are partly analyzed using RST, in an attempt to capture more information from texts than traditional keyword-based indexing allows (Haouam and Marir, 2003; Marir and Haouam, 2002). Moens and de Busser (2002) propose a system for creating legal summaries, based partly on the identification of rhetorical structure in court decisions. Shinmori et al. (2002) extract the most important claim in Japanese patent applications by analyzing the rhetorical structure of the patent description. The extraction is based on cue phrases.

Rhetorical parsing of text is helpful for many applications other than summarization. Most recently, there has been interest in extracting subjective and evaluative content from texts. Some of the research relies on keywords, such as the presence of positive and negative words in a movie review (Turney and Littman, 2003). But other approaches suggest that text structure should be taken into account. Polanyi and Zaenen (2003) discuss how certain evaluative words see their valence changed according to position in hierarchical discourse structure. Valence is defined as the evaluative content of a word, expressed in numerical terms: positive for words such as *boost*, *approval*, *attractive* and negative for *conspire*, *bankruptcy*, *annoying*. Taboada and Grieve (2004) show that simply taking into account general position in the text improves a system to extract evaluative content, and propose that parsing according to RST relations would assist the search for important and evaluative parts in the text.

Another application is in the area of essay scoring. If RST can capture text coherence, then an analysis of the rhetorical relations in a text can provide clues to the text's coherence. A measure of coherence in an essay can be used when

assigning grades semi-automatically (Burstein et al., 1998, 2001b; Burstein and Marcu, 2003).

RST structure proves useful in machine translation: Ghorbel et al. (2001) use RST structure to align corresponding portions of texts in different languages, derived from the same source. Marcu et al. (2000) translate texts from Japanese into English using RST trees: trees are produced for the source language, and modified as required to render a slightly different tree for the target language, mimicking the type of re-organization that professional translators often perform.

There is also an active area of research in the relationship between discourse structure and reference, based on an assumption already in Fox (1987) that the choice of a particular referring expression for an entity depends on the distance between the mention of the entity and its antecedent. That distance is not linear, but organized around rhetorical structure. Some computational work in this area was presented in a workshop held at the 1999 meeting of the Association for Computational Linguistics (Cristea et al., 1999). The work carried out within Veins Theory (Cristea et al., 2000; Ide and Cristea, 2000) also emphasizes the importance of hierarchical units for the disambiguation of anaphora. One example that employs RST specifically is the work of Tetreault and Allen (2003), who used the RST corpus (Carlson et al., 2002) to test whether reference could be solved more easily if discourse structure were taken into account. The initial results were not encouraging, but more recent work (Tetreault, 2005) suggests that discourse structure does improve the success of reference resolution methods. Chiarcos and Krasavina (2005a, 2005b) are also exploring this issue.

Some of the computational research has resulted in patents granted by the United States Patent and Trademark Office. The work carried out at Educational Testing Services in essay scoring resulted in two patents (Burstein et al., 2001a, 2002), and research by Corston-Oliver at Microsoft led to another patent (Corston and de Campos, 2000).

2.2. CROSS-LINGUISTIC STUDIES

RST has been applied to the study of different languages, often with the goal of making cross-linguistic comparisons and generalizations. Some of the studies were within the framework of a Natural Language Generation system. Those are mentioned in the previous section. Here we consider other cross-linguistic work, and studies that apply RST to other languages.

One of the earliest contrastive studies was that of Cui (1986), who compared English and Chinese rhetorical structures. Also Chinese–English comparisons are studies by Kong (1998) and by Ramsay (2000, 2001).

Scott et al. (1999) use RST to analyze two procedural relations that can hold between actions in a task (Goldman, 1970): 'generation' (action 1 causes action 2) and 'enablement' (action 1 is a precondition for action 2). They study the realization of generation and enablement in Portuguese, French and English (see also Delin et al., 1996 for English and French). They classify each procedural

relation into its corresponding RST relation (Purpose, Means, Condition, Result, Sequence), and also study its linguistic realization (verb form, nominalization, order and discourse markers). The study provides an interesting mapping of semantics to syntax through RST. The authors found that different rhetorical relations were used to express each of the two procedural relations (Purpose, Means, Result and Condition for generation; Sequence, Purpose, Condition and Result for enablement). In addition, the three languages use the rhetorical relations differently: for example, Portuguese does not use Means for enablement; English uses Condition and Result for enablement, but Portuguese and French do not.

Péry-Woodley (1998, 2001) examines the realization of rhetorical relations in French instructional text. She is particularly interested in the signalling of relations through other means than discourse markers (such as layout, punctuation, and lexical and syntactic devices). Salkie and Oates (1999) compared French and English relations of Contrast and Concession, focusing on the markers *but* and *although*. Vet (1999) studied the interaction of rhetorical relations and verb tense in French.

Dutch has received considerable attention, some strictly within RST (Abelen et al., 1993), and some with a focus on connectives (Knott and Sanders, 1998; Oversteegen, 1997; Pander Maat, 1998; Pander Maat and Degand, 2001; Pander Maat and Sanders, 2001), or on more general coherence relations (Pit, 2003). Abelen et al. (1993) carried out RST analyses of fundraising letters in English and Dutch, comparing their use of interpersonal, ideational and textual functions.

Much of the research in German has been around computational applications, such of them already mentioned; for example, the pioneering work of Rösner and Stede (1992). Stede has continued working with RST, with his most recent effort being the Potsdam Commentary Corpus (Stede, 2004), a corpus of German newspaper commentary articles, annotated with part of speech tags, co-reference, and rhetorical relations.

Other languages studied (often in comparison with English) include: Arabic (Mohamed and Omer, 1999), Brazilian Portuguese (Antonio, 2004; Scott and de Souza, 1990), Finnish (Mantynen, 2003; Sarjala, 1994), Japanese (Ono et al., 1994; Shinmori et al., 2002), Quechua (Stewart, 1987), Russian (Sharoff and Sokolova, 1995), and Spanish (Romera, 2004; Taboada, 2001, 2004a, 2004b).

2.3. DIALOGUE AND MULTIMEDIA

RST was developed through the analysis of monologue written text, but it did not exclude analysis of dialogues in its original formulation. A few studies have tried to apply the original, or modified, RST to dialogue.[4] Fawcett and Davies (1992) propose RST analyses of conversations that cover intra-turn relations, thus viewing a turn as a monologue within a conversation. Daradoumis (1996) extends RST to relations across turns, following Berry's (1981) and Martin's (1992) exchange model. He proposes an extended version, Dialogic RST, with

new relations to capture the exchange structure of conversation (tutorial dialogues in his case).

Stent (2000) presents preliminary results of annotating a task-oriented spoken dialogue corpus with RST relations. She proposes new relations, such as Question–Answer, that model the structure of adjacency pairs. One possibility discussed is the annotation of RST relations only within turns, and annotating relations across turns as adjacency pairs. However, that possibility is dismissed, since RST relations are found to be present across turns (Elaboration and Sequence are some of the examples given).

Taboada (2001, 2004a, 2004b) carried out two different levels of analysis, one where monologic-type analysis was performed inside the turn, and another one where the emphasis was on the conversation as a jointly constructed text. In both cases, the relations were the standard RST set, and no modification was made to incorporate adjacency pair structure or interactional structure.

Benwell (1999) reports that she had intended to apply RST to student–tutor exchanges in a university setting. However, she was discouraged by comments in Mann et al. (1992) and Martin (1992) that RST is not suitable for dynamic, dialogic interaction. She finally used RST as a starting point, and for what she termed micro-issues, whereas the macro-issues were classified according to more genre-specific labels (Requires-Solution, Cognitive Progression, Refutation). Repairs, repetitions and clarifications were also considered to be outside the RST structure.

RST models a different set of relations than those studied by Conversation Analysis (Sacks et al., 1974). A parallel analysis, of RST and CA-like analysis, rather than a merging of the two, is likely to be more informative of the development of the conversation.

RST has also been applied to environments where more than one medium or form of communication is present. The projects range from using RST in text layout decisions to applying the theory in the analysis of mixed media. Hovy and Arens (1991) pointed out that different formatting devices in text (headings, footnotes, italics) have communicative purposes. Therefore, a rhetorical relation can drive the generation of certain text characteristics. For example, a Sequence relation could be realized as a bulleted list. The interaction of rhetorical structure and text layout is also treated by Fries (1992), who analyzed a written advert in RST terms.

Bateman and colleagues (Bateman et al., 2000, 2001) use RST to design the layout of texts, including placement of graphics and features such as font size. Delin and Bateman (2002) discuss some necessary adaptations of RST in order to capture both text and graphics, but they argue that RST can be made more powerful, without the need for a different theory to cover graphical organization. A similar application is discussed by Matthiessen et al. (1998). Power et al. (2003) discuss the need to distinguish document structure (layout, sections) from rhetorical structure in a text, and apply that distinction to the generation of information leaflets for patients. Rutledge and others (Rutledge et al., 2000a,

2000b) have also proposed the use of RST to translate information and content (text, hyperlinks, pictures) into layout for web pages. The constraints involved are, for instance, space on the page, time to navigate, navigational layout, or content selection.

In other media, and multimedia environments, Rocchi and Zancanaro (2003) propose to generate summaries of a different medium, video documentaries, using RST structures. André and Rist (1996) generate multimedia presentations in which rhetorical relations are established not only between text segments, but also between parts conveyed by different media, such as pictures or labels for different parts of a picture.

Lindley and others (2001) discuss the applicability of RST to the generation of an interactive news program (speech and images). They propose to produce video data in response to a goal specified by the user. Different news segments can be produced, depending on different constraints. For instance, a shorter segment can be achieved by not generating speech and video in the satellite part of an Elaboration relation. As part of the research, the authors provide an RST analysis of news broadcasts. They point out that the RST analysis serves as an interpretation of the news.

Another active area of research has been hypertext generation. The ILEX project (Dale et al., 1998; O'Donnell et al., 2001) generated hypertext descriptions of museum objects, to be read on-line. The descriptions were generated taking coherence into account: the content of each description depends on what the museum browser has read before. The text planner uses RST structures to generate coherent text. The ALFRESCO project (Carenini et al., 1990, 1993) had similar goals: to generate dialogue for a multimedia database of Italian 14th century frescoes. The system generated not only dialogue, but also images of frescoes and film sequences, using rhetorical schemata (McKeown, 1985).

De Carolis (1999) describes the use of RST for generating hypertext-based instructions on how to perform tasks (e.g. first-aid, procedures for drug treatment). This is a plan-based system, where the communicative goals are decomposed into goals and subgoals, to be generated in order depending on the RST relation(s) holding among them.

Other media include gestures: de Carolis and colleagues (2000) suggest that rhetorical relations hold between speech and gesture. They use this notion in an embodied conversational agent that generates speech appropriate to the context.

2.4. DISCOURSE ANALYSIS, ARGUMENTATION AND WRITING

Discourse analysis can hardly be considered an application as such, since analysis of discourse in context is the starting point for any RST-related application. In this section we discuss some particularly significant uses of RST in the analysis of discourse. Related areas are the study of argumentation, and the analysis and teaching of writing.

RST has been used to describe or understand the structure of texts, and to link rhetorical structure to other phenomena, such as anaphora or cohesion. Fox

(1987) compares written and spoken discourse, and examines the relationship between rhetorical structure and anaphoric relations. Other studies use RST to examine texts in more detail. For instance, Virtanen (1995) analyzed a complaint letter to find the comprehensive locus of effect. His analysis was supported by human readers, who found the same part of the text to be the most important. Benwell (1999) analyzed spoken tutorial discourse in physics and English literature, with an adapted version of RST, to account for the spoken nature of the interaction. The findings show a different structuring of the interaction: in physics, with a pattern of embedding; and in English through coordination of issues. The author argues that this is a reflection of the way the disciplines structure knowledge. Sarjala (1994) analyzed the marking of relations of reason and cause in academic discourse. She studied English and Finnish psychology articles, and tried to differentiate relations of cause and reason, presented as semantically close in RST. She found no significant difference in the marking through connectives in either language.

The presentational aspects of RST, and especially the Effect field that each relation has, can be used to great advantage to describe, analyze, and generate argumentative discourse. Applications have focused on the capability of RST to describe and help generate argumentative discourse, for computational or pedagogical applications. From a theoretical point of view, Azar (1999) investigates five RST relations (Evidence, Motivation, Justify, Antithesis, Concession) and their logical/pragmatic equivalents in the realm of argumentation (supportive, incentive, justifier, persuader).

Carenini and Moore (2000) discuss strategies for generating evaluative arguments (i.e. arguments that attempt to affect attitudes, as opposed to factual and casual arguments, which affect beliefs). The strategies can be used by automatic personal assistants, such as advisors or sales assistants that can be found on-line. Previous work on generating arguments, such as that of Elhadad (1992, 1995), used theories other than RST (Anscombre and Ducrot, 1983). But the work of Carenini and Moore, and Grasso's (2002a, 2002b) framework for rhetorical argumentation include applications of RST to generate arguments tailored to the user's beliefs. Grasso suggests that a rigorous formalization of the conditions and effects of RST relations is necessary for argumentation purposes.

Reed and colleagues have worked in the generation of argumentative text, including its punctuation (Reed and Long, 1997). The approach is one where RST is used at the lower levels of discourse, subsumed under a layer that handles argumentation constructs at a more abstract level (Reed and Long, 1998). Although some weaknesses are pointed out, especially in RST's inability to deal with legal arguments (Reed and Daskalopolu, 1998), it is often acknowledged that RST can guide the generation of lower-level structure in argumentative discourse.

Related to argumentation is the area of writing and composition. Bell (2001) uses RST to teach composition, specifically concentrating on the structure of argumentative essays. Bouwer (1998) applies RST to an Intelligent Tutoring

System that teaches Dutch punctuation and its effect on text structure and interpretation. Many studies use RST to analyze second language writing, and determine the coherence of the text, as a measure of the proficiency of the learner (Kong, 1998; Pelsmaekers et al., 1998). Torrance and Bouayad-Agha (2001) use it to investigate the process of text creation by naive writers, from planning phase to final product.

Finally, cross-linguistic research of discourse structure is illustrated by the work of Trail and Hale (1995) in Kalasha, which also tries to address applications of RST to dialogue, since the narrative studied contains embedded dialogue.

3. Conclusions

Our conclusions here echo those in a previous review of RST (Taboada and Mann, 2006). The last 20 years or so of development and use of RST provide us with three types of contributions:

- a better understanding of text,
- a conceptual structure of relations and how it relates to coherence, and
- contribution to a great diversity of work in several fields in which RST is used as a conceptual starting point, far beyond text generation, the initial target.

This article has concentrated on the last point, how different branches of science have used RST for varied purposes. We cannot claim an exhaustive coverage of the existing literature, in part because new research is constantly being produced and published. But we hope to have highlighted some of the most significant work. The Appendix lists some existing resources for the manual or automatic analysis of text using RST.

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NOTES

1. Bill Mann passed away on 13 August 2004, shortly before this and a previous article on RST were completed. He had suggested carrying out this survey, and we had collaborated closely as the article was being written. I (MT), however, take full responsibility for any errors or inaccuracies in the current version.
2. Some projects rely on relations proposed by Reichman (1985) and by McKeown (1985).

3. [http://www.hcrc.ed.ac.uk/ilex/]
4. One of us has also proposed a different theory, Dialogue Macrogame Theory, to explore dialogue in more detail (Kreutel and Mann, 2003; Mann, 2002a, 2002b, 2003).
5. We have tried, in this section, to make reference to sites that we believe are stable. Some of the links may nevertheless become unavailable.

APPENDIX: RST RESOURCES[5]

A.1 ANALYSIS TOOLS

Mick O'Donnell first created a tool for automating the analysis and drawing trees. It was then modified by Daniel Marcu. Both are freely available, from their websites below or from links from the RST website (Mann, 2005). A third rhetorical annotation tool, RhetAnnotate, exists, but we have not tested it.

- Mick O'Donnell's RSTTool: [http://www.wagsoft.com/RSTTool/]
- Daniel Marcu's RST Annotation Tool: [http://www.isi.edu/licensed-sw/RSTTool/]
- Hatem Ghorbel's RhetAnnotate: [http://lithwww.epfl.ch/~ghorbel/rhetannotate/]

A.2 CORPORA

A team of linguists at the Information Sciences Institute annotated Wall Street Journal articles using Daniel Marcu's RST Annotation Tool. The corpus is available through the Linguistics Data Consortium, free for members, and at a cost for non-members (Carlson et al., 2002).

Another annotation effort is underway at the University of Potsdam. The corpus consists of newspaper commentary articles in German. The articles are annotated with RST structures, using Mick O'Donnell's tool. The annotation also includes part of speech tags and co-reference (Stede, 2004).

A project at the Universidade Federal de Säo Carlos in Brazil is building a discourse parser for Brazilian Portuguese, DiZer (Pardo et al., 2004). As part of the effort, they have compiled a corpus of Brazilian Portuguese scientific texts, annotated using Marcu's tool. The corpus is freely available from the project's website: [http://www.nilc.icmc.usp.br/~thiago/DiZer.html].

Although not using RST proper, it is worth mentioning the work being carried out for the Penn Discourse TreeBank (Miltsakaki et al., 2004; Prasad et al., 2004), a large-scale annotation of connectives in discourse and their arguments (i.e. the clauses/sentences that the connectives link). The corpus will be a valuable resource to map discourse connectives to rhetorical relations.

Wolf and colleagues (Wolf et al., 2005) have published a corpus of news articles annotated with coherence relations. The relations are not represented as tree structures, the most common representation (Taboada and Mann, 2006), but through graphs. As with the Penn Discourse TreeBank, the formalism is not RST, but the annotation will likely be of interest to researchers working with rhetorical or coherence relations.

A.3 WEBSITE

The RST website (Mann, 2005) is a compilation of a number of resources. It includes a brief description of the theory in English, French and Spanish, along with relation names and definitions in all three languages. The site also contains links to some of the resources mentioned earlier. There are published and unpublished analyses of texts, bibliographical references, and a list of possible research topics.

A.4 MAIL LIST

The RST discussion list was created in November 1999 as a forum for the discussion of the theory. It is maintained and archived within the LINGUIST server. The archives, and instructions on how to subscribe or unsubscribe, are available from this link: [http://listserv.linguistlist.org/archives/rstlist.html].

A.5 OTHER TOOLS

David Reitter has created a tool to generate RST-style diagrams using the LaTeX text processing software. The package produces an RST tree and marks its corresponding text with the appropriate span labels: [http://www.reitter-it-media.de/compling/rst/].

Daniel Marcu also offers other tools to process the output of his discourse annotation tool. These are available from his website: [http://www.isi.edu/~marcu/].

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