

Rhetorical Structure Theory: Looking Back and Moving Ahead

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Reviewing RST

RST

- descriptive linguistic approach to a range of phenomena in the organization of discourse
 - without strong links to any previous descriptive tradition
- developed by researchers interested in Natural Language Generation
 - NLG did not strongly influence the framework
- **agnostic** beginning of theory started with few assumptions about how written text functions, and how it involves words, phrases, grammatical structure, or other linguistic entities
 - RST complement other text description methods (words, phrases, grammatical structure, semantics and pragmatics, all make contributions that are qualitatively distinct from those of RST)
- systematic way for an analyst (also called observer or judge) to annotate

RST: Meaning of the relations

All RST relations are defined in terms of four fields:

(1) Constraints on the nucleus;

(2) Constraints on the satellite;

(3) Constraints on the combination of nucleus and satellite;

(4) Effect (achieved on the text receiver).

- Annotators make judgments, based on **context** and the **intentions** of the writer.
- Definitions are based on **functional** and **semantic** criteria, not on morphological or syntactic signals

RST: Nuclearity in discourse

Nucleus

- Most important
- More essential to the writer's purpose
- Can be understood to a certain extent when the satellites have been deleted

Satellite

- Secondary
- Less essential to the writer's purpose
- Incomprehensible without the nucleus

Hypotaxis & Parataxis

- Subordination and coordination at the clause level may have arisen out of the grammaticalization

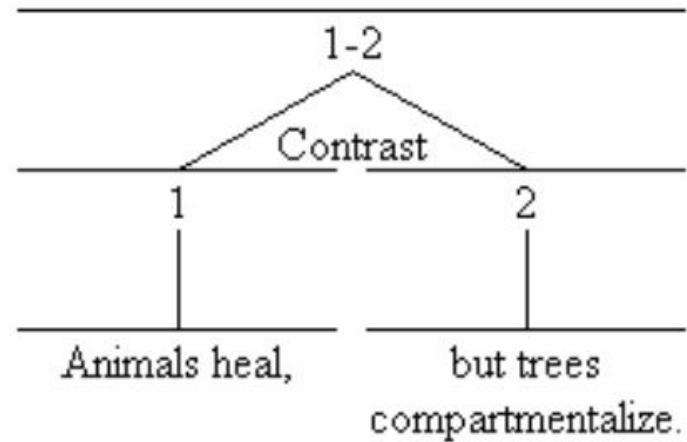
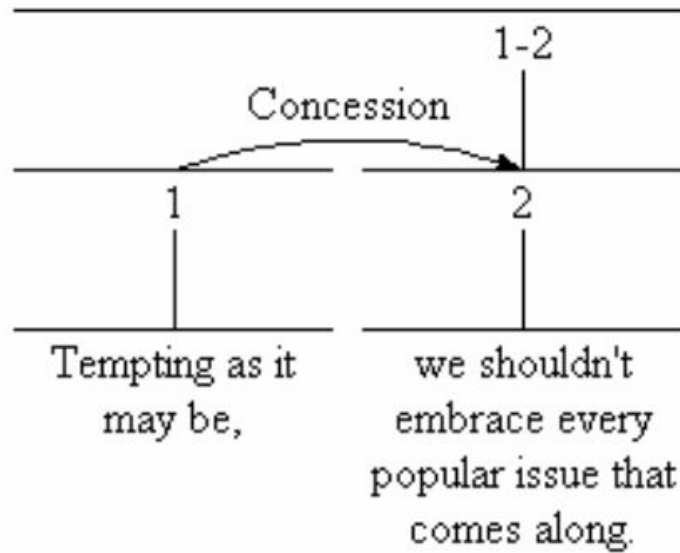


Figure 2. Concession and Contrast relations

RST: Hierarchy in text analysis

Analysis of a text is performed by applying schemas that obey constraints of

- **completedness** (one schema application contains the entire text);
- **connectedness** (each span, except for the span that contains the entire text, is either a minimal unit or a constituent of another schema application);
- **uniqueness** (each schema application contains a different set of text spans);
- **adjacency** (the spans of each schema application constitute one contiguous text span).

RST: Why RST

1. RST proposes a different view of **text organization** than most linguistic theories, and a more complete one than most theories of discourse;
2. RST points to a tight relation between **relations and coherence** in text, thus constituting a way of **explaining coherence**;
3. RST provides a characterization of text relations that has been implemented in different systems, and for applications as diverse as text generation and summarization.

Applications

- Writing research
 - How are coherent texts created
 - RST as a training tool to write effective texts
- Natural Language Generation
 - Input: communicative goals and semantic representation
 - Output: text
- Rhetorical/discourse parsing
 - Rendering of a text in terms of rhetorical relations
 - Using signals, mostly discourse markers
- Corpus analysis
 - Annotation of text with discourse relations (Carlson et al. 2002)
 - Application to spoken language (Taboada 2004, and references in Taboada and Mann 2006)
- Relationship to other discourse phenomena
 - Between nuclei and co-reference
- For more applications (up to 2005 or so):
 - Taboada, Maite and William C. Mann. (2006). Applications of Rhetorical Structure Theory. *Discourse Studies*, 8 (4), 567-588.



Issues in RST

Issues in RST

1. Goal of RST analyses

- NLG
- A theory that is descriptively adequate is one that helps characterize the internal structure of texts, producing plausible text structures.
- Cognitive plausibility (elusive)

2. EDU determination

- The usual division rule is that each independent clause, along with all of its dependencies of any sort, constitutes a unit.
 - It misses the fine detail.
 - It is tied to the language of the text, and its clause-forming processes.
 - It poses a problem for spoken language, where units are usually considered to be intonation units, and not necessarily independent clauses.

3. Should RST analyses be restricted to trees?

- + trees are convenient, easy to represent, and easy to understand.
- - no theoretical reason to assume that trees are the only possible representation of discourse structure and of coherence relations.

Issues in RST: Coherence, hierarchy, intentions , and the nature of relations

The RST definition of coherence of text involves finding an intended role in the text for every unit.

1. Hierarchy and nuclearity have been most important in computational applications of RST. (Marcu 1996 - compositionality principle)
2. RST relations may be simply a reflection of intentions and relations among intentions. (Rambow 1993)
 - intentions and relations are different, although possibly complementary
3. Hierarchical structure helps produce the impression of coherence in discourse

Issues in RST: Number and types of relations

Subject matter

- text producer intends for the reader to recognize the relation

Presentational relations

- increase some inclination on the part of the reader

effect intended

- External/internal (Halliday and Hasan, 1976; Martin, 1992).
- Semantic/pragmatic (Sanders et al., 1992, 1993; Schiffrin, 1987; van Dijk, 1977, 1979).
- Ideational/interpersonal. This is a distinction proposed in Systemic Functional Linguistics (Halliday, 1985), and applied to rhetorical relations by others (Maier and Hovy, 1993; Redeker, 2000). The SFL distinction includes a third category, textual, which does not fit clearly against the other dual classifications.
- Experiential/rhetorical (Benwell, 1999).
- Causal/diagnostic, restricted to relations linked by connectives such as *because*, e.g., *The streets are wet because it is raining* versus *It is raining, because the streets are wet* (Traxler et al., 1997).

semantic/pragmatic divide proposed by van Dijk 1979

“[p]ragmatic connectives express relations between **speech acts**, whereas semantic connectives express relations between denoted facts” (van Dijk, 1979: 449)
proposition

Issues in RST: Interpreting unsignaled relations

- **Signaled relations:**
 - cue phrases(coherence markers, cue words, discourse connectives, or discourse markers),
 - mood, tense and aspect, or structural characteristics
- **Unsignaled relations** don't imply that there's no relations, but absence of signals can be expected to produce incoherence.
 - never signalled: Volitional-Result, Background, Evidence and Concession
 - rarely signalled: Background and Summary



Other approaches to relations in text

Other Approaches to Relations

- Grosz and Sidner (1986): integrate intentional structure with focus of attention in discourse, relating both to discourse structure.
- Relevance Theory (1995) : propositions can be in a relation to each other, a relation of relevance.
- In summary, neither Grosz and Sidner nor Relevance Theory seem to say anything further than “there is some relation”.
- Hierarchical structure: Geneva pragmatics school (Roulet, 1995; Roulet et al., 1985) or Argumentation Theory (Anscombe and Ducrot, 1983). *Discourse markers and their relations signaled.*
- Computationally-oriented efforts: Polanyi (1988; 2001)
- Effect of discourse on anaphora: Veins Theory (Cristea et al., 2000; Cristea et al., 1998; Ide and Cristea, 2000) - *domain of referential accessibility*
- DRT & SDRT include a number of rhetorical relations
- Systemic functional linguistics SFL



Conclusion

Conclusion

Reviewing almost twenty years of development and use of RST, the value that we find in RST is in:

- the analyses and consequent understandings of text that are enabled,
- the conceptual structure of relations and coherence, and
- the 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.

Open issues:

1. Systematic large-scale application of RST in texts
2. Endowing the theory with psychological validity
3. The interface of rhetorical structure and many other discourse phenomena.
 - investigations on the relationship of discourse structure, on the interaction of discourse structure, anaphoric relations and thematic role, and discourse structure and clause- internal phenomena such as VP ellipsis, gapping, or extraction.