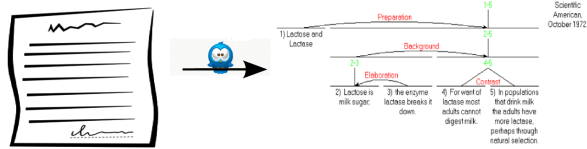


Applying Rhetorical Structure Theory to Twitter Conversations

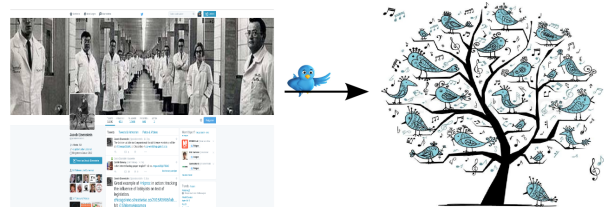


Uladimir Sidarenka, Matthias Bisping, and Manfred Stede
{sidarenk,bisping,stede}@uni-potsdam.de

Rhetorical Structure Theory (introduced in 1988 by W. C. Mann and S. A. Thompson) is a formal linguistic theory which assumes that virtually every monologue text has an underlying coherence structure (typically a tree). The leaves of this structure are represented by elementary discourse units (usually clauses or clause-like elements) which are then hierarchically organized to bigger components using semantic or pragmatic links (discourse relations).

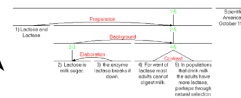


Twitter Conversations are online discussions between two or more participants which arise on the Twitter microblog service whenever a user answers to another message using the "in-reply-to" function. In fact, according to Scheffler (2014), every fifth German tweet posted in April 2013 was a reply to some other microblog. These conversations are also organized in tree-like branching structures which supposedly exhibit a special form of coherence.



Central question:

What do rhetorical structures look like in users' conversations?



The answer to this question depends on the solutions to the following problems:

CMC elements such as @-mentions, retweets, #hashtags, URIs, and emoticons are a halfway house between syntactic constituents and elementary discourse units (EDUs). On the one hand, they are semantically closely related to the surrounding clauses and typically do not express propositions per se. But, on the other hand, they are frequently syntactically independent and do not fit in the predicate-argument structure of the sentences.

Questions:

- Shall Twitter phenomena be regarded as EDUs?
- To which discourse elements and by which relations should they be connected?

Example:

@emnlp2015 Here's the social media recap of #EMNLP2015, have a look: <http://buff.ly/1OL1ybe> CC @gideonmann @nlpndx @soegaarducph Ty.



Sequential ordering of discourse segments, which is extensively used in classical RST both in parsing algorithms and for estimating the inter-annotator agreement, cannot be assumed for tree-like branching multilogues. In particular, multiple answers to the same tweet break down the notion of adjacent EDUs and might even introduce non-projective edge (if we apply the BFS linearization).

Question:

- Shall we linearize conversations (using either DFS or BFS) or should we rather adjust existing parsing techniques and agreement metrics?

Example:

@MontelWilliams: Donald you really can't stand the fact #PopeinUS
@AnnieSage: I'm Simply horrified that his supporters think he's telling them the truth
@Twitlertwit: those supporters DON'T want TRUTH
@AnnieSage: And I'd rather eat glass than vote for that narcissistic *ss.



A **structural constraint** of RST explicitly imposes a restriction that the resulting coherence structure should necessarily be a tree and implicitly assumes that there is a single coherence tree for every sentence. This restriction, however, becomes a hindrance in cases when one microblog simultaneously refers to multiple messages that are preceding it in the discussion.

Question:

- Shall we remove the tree constraint in favor of linguistic adequacy or keep it, preferring lower computational complexity, or maybe choose the middle way taking DAGs?

Example:

@SpeedTutorial: Do u also have paranoia after such discoveries #spidersAreTerrible
@soperfekt_xo: I have one hanging in my parlor. Now sitting motionless in my chair:D
@SpeedTutorial: My downstairs neighbors had to stand my vacuum
@soperfekt_xo: I can't reach it with my vacuum it's sitting too high



The **relation taxonomy** in RST distinguishes between subject-matter (semantic) and presentational (pragmatic) links. The former group encompasses relations whose intended effect is that the reader recognizes the link in question. The latter group includes relations whose intended effect is to increase some inclination in the reader. But neither of these groups readily provides relations for connecting elements whose entire goal is to manage conversation turns and actions, e.g. greetings, apologies, farewells.

Question:

- Shall we introduce a new group of relations for communication management?

Example:

@BrennenCTaylor: Hello world
@world: hello @BrennenCTaylor

