

Intentions, rhetoric, or discourse relations ?  
- a case from multilingual document generation  
Dietmar Rösner\*\*

### Project background

The TECHDOC system [Rösner, Stede 92b] is an implemented prototype that starts from a domain knowledge base about maintenance plans, objects and actions involved, potential hazards etc. and delivers simultaneously generated instruction texts in - at the moment - three supported languages (English, German and French). Our approach is best characterized as an attempt to demonstrate the feasibility of multilingual document generation from a kb as an alternative to MT approaches starting from a source text.

### Empirical investigations: How useful is RST ?

In the analysis phase of the project we carefully worked through a corpus of multilingual documents: primary focus was on automobile maintenance manuals. This work was supplemented by instructional texts for other technical objects (for end consumers as well as technicians, e.g. aircraft maintenance), software documentation and other multilingual material (e.g. tourist information leaflets).<sup>1</sup>

One of the issues was the question whether an RST <sup>2</sup> representation of document structure could serve as intermediate, still language independent level mediating 'between' the knowledge base and the texts rendered in different languages.

The answer was somewhat of a 'Yes, but ...'. As reported in more detail in [Rösner, Stede 92a] it was possible to assign identical RST analyses to corresponding manual sections in English and German, a result again established in recent work with the French versions. This result is not too surprising given the fact that multilingual technical documents typically emanate from the (more or less adequate) translation of a completely organized monolingual 'master copy'.

In order to achieve this welcome 'parallelism' some claims of RST had to be abandoned (cf. [Rösner, Stede 92a]). One point was the question

---

\*\*c/o FAW, P.O.Box 2060, D - 89010 Ulm, Germany;email: roesner@faw.uni-ulm.de

<sup>1</sup>In addition, we have analyzed a number of German texts taken from press releases and advertisements, cf. [Rösner, Stede 93].

<sup>2</sup>As others we see the 'rhetorical' in RST as a misnomer (cf. e.g. [Dale, this volume]) and prefer to talk about 'discourse relations'.

of ‘minimal units’ of an RST analysis. Since even closely related languages differ in their realization potential or their preferred way to express relations minimal units could no longer be chosen primarily on syntactic grounds.<sup>3</sup> Content that in one language is e.g. expressed in a (sub-)clause may preferably be expressed in a PP in another one (and vice versa): “Check the coolant level in the reserve tank when the engine is at normal operating temperature.” vs. “Den Kühlmittelstand im Reservetank bei normaler Betriebstemperatur des Motors kontrollieren.”

Other adaptations were necessary for **simultaneous analyses** (cf. below) and for complex interdependencies like in the following example were **RST’s adjacency restrictions** have to be sacrificed in order to get an acceptable account:<sup>4</sup> “[The spark plugs must be securely tightened]<sub>sa</sub>, [but not over-tightened]<sub>sb</sub>. [A plug that’s too loose]<sub>9a</sub> [can get very hot]<sub>9b</sub> and [possibly damage the engine]<sub>9b'</sub>; [one that’s too tight]<sub>10a</sub> [could damage the threads in the cylinder head]<sub>10b</sub>.”

### Rhetoric in technical documents ?

If we take ‘rhetoric’ in the classical sense of ‘art of persuasion’ examples like the following are rare exceptions in our corpus: ‘*The horn is actuated by pressing the button fitted in the steering wheel spoke. As a good driver, your use of the horn will be minimal.*’

The bulk of the material is not directly addressing the reader but oriented towards the domain and presented in an impersonal ‘objective’ style. This is reflected in the relations that we found in the analyses. Around a dozen of different subject-matter relations were used<sup>5</sup> but only one ‘rhetorical’ relation: MOTIVATION.<sup>6</sup> MOTIVATION typically showed up in examples like the following where a recommendation with respect to an action is enhanced with information about its PURPOSE. Since these relations belong to different ‘metafunctions’<sup>7</sup> we deliberately assigned them simultaneously: “*Replace plugs one at a time, so you don’t get the wires mixed up.*” “. . . *Thread the new spark plug in by hand to prevent crossthreading.*”

<sup>3</sup>cf. [Meteer, this volume] for a similar argument with monolingual examples.

<sup>4</sup>see [Carberry et al., this volume] for similar examples from dialogues.

<sup>5</sup>ALTERNATIVE, AND, BACKGROUND, CONTRAST, CONDITION, ELABORATION, PRECONDITION, PURPOSE, SEQUENCE, STEP-SEQUENCE, UNTIL, VOLITIONAL-RESULT

<sup>6</sup>cf. [Vander Linden, this volume] for similar findings with monolingual instructions.

<sup>7</sup>interpersonal vs. ideational in systemic terms corresponding roughly to intentional vs. informational in e.g. [Moser & Moore, this volume]

## Intentions in technical documents ?

Technical documentation is provided on purpose: in order to fulfill legal requirements (e.g. EC product reliability act), as a marketing aid, as a service to the customer, etc.. In addition to such global motivations other intentions influence the strategic and tactical decisions of ‘What should be communicated ?’ and ‘How should this be done ?’.

The primary strategic intention is ‘ENABLEMENT to ACT’. The best way to fulfill this is to provide all information that enables the customer to make best use of the product, to maintain or troubleshoot it, to avoid hazards, etc.. As a tactical issue this information shall be organized to enhance understandability and ease of access, it shall be presented in a concise manner, but nevertheless be complete (at least when taking ‘normal’ inferences into account).

Some of these intentions (e.g. ease of processing and understanding) seem to be ‘compiled’ into the conventional, schematized way to organize maintenance manual texts. A very obvious example is that steps to be performed are mentioned in the texts in the order of their execution.<sup>8</sup> Among other aspects this allows to easily synchronize reading the text and performing the actions; although other orders are imaginable these would demand for explicit signalling and thus increase the effort for both writer and reader.

## Discussion: Towards a unified view ?

Although [Mann and Thompson 87] report that ‘virtually every text has an RST analysis’ (p. 20), they frankly admit that ‘certain text types characteristically do not have RST analyses’. But what, if merely being assigned an RST analysis is not a sufficient account for a text ?

As material for the discussion, see the following short paragraph from a DOS user guide:

*”The IBM personal computer disk operating system (DOS) controls the movement of information on the computer. You can think of DOS as a policeman who directs traffic at a busy intersection. In much the same way DOS controls the way the computer uses programs, games, and applications.”*

If one tries to analyse this paragraph in RST style one probably will have to introduce two discourse relations that might be labelled as ”Introduction

---

<sup>8</sup> Another example of the relevance of domain structure, cf. [Sibun, this volume].

of an analogy” (indicated here on the surface by ”You can think of ... as ...”) and ”Transfer of an analogy” (indicated by ”In much the same way ...”). No other example of the well known lists of discourse relations seems to be adequate enough. But what would we gain from such an analysis ?

We have to look at the example from another angle: the introduction of the analogy is functional for the writer’s intention that the reader best understands on a high level what DOS is intended for. To put it in other words: There is no reason based on mere content to talk about DOS and to talk about a policeman directing traffic. Only the pedagogical intentions of making the text understandable give a reason to make up the analogy and to transfer the analogy back to the main topic.

In this sense discourse relations should be interpreted as realizing underlying intentions and they are best discussed as a ‘repertoire’ that allows to pursue intentions.<sup>9</sup>

## References

- [Mann and Thompson 87] William C. Mann, Sandra A. Thompson. *Rhetorical Structure Theory: A Theory of Text Organization*. In: L. Polanyi (Ed.) : The Structure of Discourse. Norwood, N.J.: Ablex, 1987.
- [Rösner, Stede 93] Dietmar Rösner, Manfred Stede. *Untersuchungen zur Struktur von Texten: RST-Analysen deutscher Texte*. in: KI - Künstliche Intelligenz: ISSN 0933-1875, Baden-Baden, June 1993
- [Rösner, Stede 92a] Dietmar Rösner, Manfred Stede. *Customizing RST for the Automatic Production of Technical Manuals*. In: R. Dale, E. Hovy, D. Rösner, O. Stock (Eds.): Aspects of Automated Natural Language Generation. Lecture Notes in Artificial Intelligence 587, Springer, 1992.
- [Rösner, Stede 92b] Dietmar Rösner, Manfred Stede. *TECHDOC: A System for the Automatic Production of Multilingual Technical Documents*. in: G. Görz (Ed.): KONVENS 92. Reihe Informatik aktuell, Springer, 1992.

---

<sup>9</sup>or as ‘means for expressing intentions’, cf. [Korelsky & Kittredge, this volume]