

Assumptions Underlying Discourse Relations: Which ones are really there and where are they?

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The goal of this paper is to challenge some of the assumptions that have been inherent in much of the research on discourse relations, especially that which has gone on in the context of text planning. The primary assumption has been that there is only one set of relations, encompassing structural, rhetorical, and intentional information. The second assumption is that these relations only operate at the clause level and above. These are best exemplified by Rhetorical Structure Theory (Mann & Thompson 1987), but appear to some degree in almost all approaches to discourse.

In what follows, we make three points:

1. Given what is directly evidenced in a text, there is no justification for the conventional approach to discourse relations, which conflates the various kinds of information in the discourse.
2. Rhetorical relations can appear at any level of text, within and between clauses, and there is no justification for requiring that there be a specific relation between all segments of text.
3. Intentions control the decision making of the text rather and do not necessarily appear explicitly in the structure of the text.

Evidence from the text

We begin by working bottom up from what is evidenced directly in the text.

Text has constituent structure both below the level of the clause (studied by syntacticians) and above the level of the clause (studied by those working in discourse). One kind of evidence for constituent structure above the clause level is the pattern of pronominalization (e.g. Grosz & Sidner's (1986) attentional structure). Others include orthographic markers (e.g. indenting paragraphs) and intonation.

- "Relations", such as contrast, sequence, causality exist in the text and are directly evidenced by lexical items, such as "cue words" (Reichman 1985).

- Intentions are evidenced indirectly by the fact that language is a goal directed activity.

Discourse theories, such as RST, conflate these three kinds of information into one, as shown in the following:

We consider discourse to be a structured collection of clauses. This structure is expressed by the nesting of segments of the discourse; Each discourse segment has an associated purpose, ... i.e. a communicative goal. Each adjacent pair of such purposes is related in the discourse structure by one or more discourse structure relations, [following RST] (Hovy, et al. 1992).¹

This approach, while identifying three kinds of information, structural, intentional, and rhetorical, forces them to be isomorphic. Yet no justification is provided for this assumption.

Moore & Pollack (1993) argue for separating different kind of relations that hold between texts by introducing different “levels” at which segments of text can be related.² They argue that some relations are “informational” (e.g. volitional cause) and other relations are “intentional” (e.g. evidence), and they say of one their examples: “The intentional and informational structures for this discourse are not isomorphic”. One can conclude from this that at least one of these structures must non-isomorphic with the constituent structure of the discourse, although the authors do not discuss what the exact relationship between these structures is.

Rhetorical Relations

Rhetorical relations, as they are generally defined, function to provide coherence to the text. While it is clear that information in a text is connected by relations such as sequence, purpose, causality, etc., it is not clear that (a) the relations are between consecutive segments of text that are clause-sized or larger, (b) all such segments are related by a single, specific relation.

As discussed in Meteer (1993), relations such as “causation” can appear within a clause as well as between clauses, as shown by the following:

- (1) My flicking the switch caused the light to turn on.
- (2) Because I flicked the switch, the light turned on

Furthermore, these alternatives offer different options for what information to include. For example, the clause version shown in (3) allows the speaker to omit tense and agent information whereas in (4) the speaker can switch the order of the information.

- (3) Flicking the switch causes the light to turn on.
- (4) The light turns on because someone flicks the switch.

¹From a paper describing joint work in text planning on the Penman Project at ISI/USC in California and the Komet project at GMD-IPSI in Darmstadt, Germany.

²Unfortunately, their use of “level” to describe these different kinds of information is easily confuse with the use of “level” to mean stage of processing.

An approach that makes relations between clauses the province of the text planner and those within clauses the province of the linguistic component cannot offer these different versions as alternatives. (See Meteer 1992 for a further discussion of this problem.)

Intentions in Discourse

While it is clear that intentions play an important role in discourse, there is no evidence for a special set of intentional relations that operate only at the discourse level. The speaker needs to keep track of intentions, for example to answer follow up questions (Moore & Paris 1989) and the hearer needs to recognize intentions in order to recognize the speaker's plan (e.g. Litman 1985). But there are no requirements in either of these tasks that the intentions be isomorphic to the constituent structure of the text.

In fact, I would argue that "intentional structure" is a misnomer, but rather intentions are what control the decision making. Occasionally, there is direct evidence of these intentions in the text, for example, in the first sentence of this paper: "The goal of this paper is...". However, for the most part, intentions are implicit; they are a function of the information being communicated, rather than a function of the structure of the text. This should not be surprising, since there are many kinds of inferences one can get from a text that is not directly reflected in its structure, and from an understanding perspective, the intentions of the speaker are just one more inference.

From a generation perspective, there needs to be an intensional model—a model of the mind of the speaker—with explicit goals, intentions, so that decisions can be made coherently. Little work is done on intentionality in utterances, because few underlying programs are structured in this way. Underlying programs need to be coherent entities with goals, or there can be no notion of "intentionality".

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