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Against Discourse Relations as Primitives for Discourse Structure

One of my disappointments in my first encounter with particles and conjunctions (particles from now on) around 1986 was that there is such a bad match of particles with discourse relations as we know them. The few particles that seem to be concerned with discourse structure as such are anyway (popping), although (concession) and the causal particles (explanation). This suggests that useful as discourse relations may be in discourse annotation (the context of their discovery) they do not by themselves play an explanatory role in either production or interpretation.

Thesis: inferring a discourse relation is a question of automatic inferences of the following kinds on the level of the clause.

Identity Inferences (reformulation, restatement)
Causal Inferences (explanation, result, narration (occasion), anticausal, background)
Argumentational support (conclusion, summary, justification, evidence)
Topic Management (reformulation, restatement, elaboration, list, narration, contrast)

Causal and identity inferences are central in visual perception. New events need to be identified with given ones or kept distinct and it needs to be decided which if any of the given events is the cause or partial cause (we follow Hobbs in seeing in giving a causal analysis of occasion, his version of narration). In both cases there is a formula: $p(x = y) > p(\bigwedge_{yisgiven} x \neq y)$ and $p(ycausesx) > p(\bigwedge_{yisgiven} \neg causey = x)$. Without the forced choice, identity inferences and causal inferences are not rational in visual perception, since they add extra non-observable properties. Under a purely rational approach however, aspects of the same object would not be identified and a changing scene would not be understood as a causal chain of events. One would also be unable to acquire the stochastic knowledge that is necessary for making the inferences in the first place.

For both of these inference types, there can be found many markers that force or rule out the inference. The main function of additive markers (too, also, and, other) is to bring about distinctness with the antecedent. Since identity or entanglement is the default, there is little need for identity markers on the clause level, so where one finds them they tend not to be strongly grammaticalised: thereby, in that way. Locatives —causing a spatial or temporal location shift— are an alternative way of marking distinctness. In the nominal domain, identities can be forced through pronouns and ellipsis.

Aliena broke her skis. She lost her only means of transport.
Bill pushed John. John fell.

Causal inferences and identity inferences have a wide range of other applications in linguistics, in presupposition, counterfactuals, temporal inferences, the treatment of non-restrictive modification. Text structure is hardly the appropriate context in which to deal with them.

Topic management inferences can be treated in interpretation as the attempt to keep topics unchanged by default. Preferably keep the local topic, otherwise keep the topic above that. Keeping the local topic gives a reformulation or the beginning of an elaboration over that. Sharing the overarching topic with the last utterance gives list, narration and contrast. Special cases are also conclusion and summary. Pop markers including exclusives (which may indicate the last topic is closed) seem the only markers that are only there for text structure. Perhaps an account of questions and answers is the most appropriate for these inferences.

The third type of contributing inferences has to do with evidence and argument. x can be a consequence of y, y can indicate that x (by causal abduction), y can be the case if x is a normal K. It is hard to see that anything in NLP works without assuming automatic inference of this kind. Stochastic inference gives the whole range of these notions.

One can run through any classification of DRs and show how the three factors combine in explaining the perceived DRs. This will be the main task of the talk.

From the speaker perspective, it is should be clear immediately that the DRs do not correspond to planning steps. At the end of an utterance, there may be more that needs to be said about the current topic, there may be grounding problems, there may be a need for further arguments or other issues to address. These give goals and there are strategies to resolve them which can be followed based on the information that is available. The success chances can be measured by simulating the hearer reaction, making assumptions about the hearer's information. Discourse relations can be seen as a partial categorisation of such strategies, but they do not provide a characterisation of the planning process as such.