

Why give evidence?

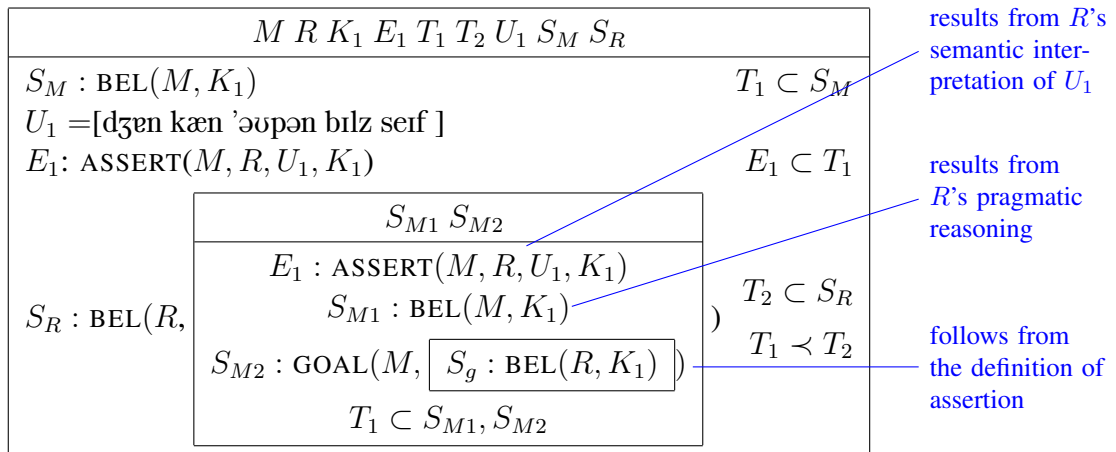
In this paper we look at evidence from the point of view of its function in discourse. Why do speakers provide evidence? The central idea is that speech acts have goals. For instance, the goal of an assertion of proposition p is that the addressee commit to the belief of p . Contrary to a common assumption, we assume that common ground with respect to p is reached no sooner than the addressee agrees to believe p . Mere understanding of p is not enough. Similarly, the goal of a question is that the addressee give an answer, and the goal of a directive is that the addressee perform the requested action. Various things can go wrong on the way to reaching these goals. Support speech acts, of which evidence is one kind, serve as repair for evident or anticipated failures of other speech acts. Mann and Thompson (1988, p. 251) define *Evidence* as a rhetorical relation between discourse segments, one of which (the *nucleus*) is such that the addressee might not believe it, and the other one (the *satellite*) is likely to be more credible, and the speaker provides the satellite in order to increase the addressee's belief in the nucleus. In other words, the goal of providing *Evidence* is to repair for the failure of an assertion of p to convince the addressee of the proposition p .

In this paper we develop a formal framework that allows to derive *Evidence* and other support relations between speech acts in discourse from general assumptions about rational goal-directed activity of humans and the properties of speech acts to the extent that they are encoded in their linguistic form. The advantage of this approach over existing formal approaches to the inference of rhetorical relations, such as SDRT (Segmented Discourse Representation Theory, Asher and Lascarides, 2003), is that it makes no assumptions about a specific inventory of rhetorical relations as ontological primitives and makes the theory of discourse structure part of a theory of human rational behaviour and planning. Against this background, we reconsider the relationship between *Evidence* as a type of relational speech act (or rhetorical relation) and evidentiality as a grammatical and semantic category.

Discourse Metarepresentation Theory: In this paper we introduce the formal framework which we call *Discourse Metarepresentation Theory* (DMT). It makes use of the formalism of Discourse Representation Theory (Kamp, Genabith, and Reyle, 2005, DRT) including its recent developments such as the facility of mode indicators for mental states. But in contrast to DRT, the main object of representation is not the content of utterances, the information state of the communication participants or the common ground, but the communicative situation as a whole from a researcher's point of view. The representation includes meta-level descriptions of speech acts, their goals and mental states of the speaker and the hearer they bring about (cf. Dialogue Game Boards in Ginzburg, 2012). The representation of the common ground can be derived from this metarepresentation. The DRS in (2) gives a rough idea of the representation of the communicative situation after the first utterance of (1), U_1 , produced by Mary (M) at time T_1 addressing Rick (R), which asserts the proposition K_1 that John can open Bill's safe. If Mary is sincere, Rick can infer from this that she believes K_1 . As is common for propositions that require evidence, Rick believes that Mary believes K_1 , but Rick does not yet believe K_1 . In (2), this is expressed by the fact that K_1 is not directly embedded under Rick's belief state. That means that K_1 has not yet entered the common ground.

- (1) a. John can open Bill's safe.
 b. He knows the combination. (Hobbs, 1979)

(2) Description of the communicative situation after (1-a):



Evidence among other kinds of support: All we need to derive that Rick infers an *Evidence* relation in (1) is the set of definitions and axioms below. From the definition of assertion it follows that R believes that at T_1 M has a goal S_g namely to make R believe that K_1 . When at T_2 Mary utters (1-b), since Rick has no evidence that Mary does not have that goal any more (for instance, because the goal was achieved), by inertia it follows that when uttering (1-b) Mary still wants to convince him that John can open Bill's safe. Then Axiom 1 predicts that Mary must believe that the immediate goal of the second assertion—Rick believing that John knows the combination—will cause him to believe the first assertion—that John can open Bills safe. This is nothing else but the content of an *Evidence* relation. Thus we derive that Rick infers that Mary intends (1-b) as evidence for (1-a).

Definition 1: Goal-directed act Act E of agent A is a goal-directed act at time T with a goal state S_g iff S_g does not hold at T , A desires S_g to hold and A believes that E causes S_g .

Definition 2: Speech act A speech act is a goal-directed act of uttering U addressing hearer H whose goal is to affect (the mental state of) H .

Definition 3: Assertion An assertion is a speech act whose goal is to make the hearer H believe the proposition conveyed by utterance U .

Axiom 1: Subordination If an agent A has a goal S_g then any goal-directed act E that A performs is subordinated to achieving the goal state S_g , that is, A believes that E 's (immediate) goal S'_g will cause S_g .

Axiom 2: Inertia If agent A believes that state S holds at T_1 and does not believe that S does not hold at T_2 , where $T_1 \prec T_2$, then A believes that S holds at T_2 .

The same axioms can be used to predict the hearer's inference of other support relations. In (3) the first speech act is a request, i.e. the goal of (3-a) is to make the hearer post the letters. By the same reasoning, the hearer infers that the speaker thinks that if the hearer believes the proposition in (3-b), this will cause him fulfil the request. Obviously, the hearer will only do it if he is willing and able to. In particular, (3-b) is supposed to increase the hearers ability to post the letters, i.e. this is an instance of Mann and Thompson's *Enablement*. Increasing willingness requires a *Motivation* relation.

- (3) a. Could you please post these letters?
 b. The stamps are on the table.

In order to block the inference of support relations, the discourse must contain explicit signals suggesting that the second utterance does not continue to pursue the goal of the first. Typically this is the case when the communication participants assume that the goal of the first utterance has been reached. In dialogue this is ensured through backchannelling, whereas in monologue the speaker must directly or indirectly indicate to the hearer that she assumes success of her previous speech acts. Presupposition triggers such as *also* as well as many other kinds of linguistic devices can serve this purpose.

Evidence and evidentiality: The above picture raises a number of interesting questions concerning the relationship between evidence and evidentiality. It implements the idea that evidence is only relevant for assertions. Could this explain the sensitivity of evidentiality marking and interpretation for the type of speech act in which it occurs?

Evidentiality categories mark distinctions between different sources of evidence, such as inferential evidence (4), hearsay (5), and visual experience (6). In languages like English that do not have a grammatical category of evidentiality in the canonical sense, the source of evidence can be marked lexically, e.g. by *must* in (4) (cf. Fintel and Gillies, 2010), but the marking is not obligatory. Even though the source of evidence in the (a) and the (b) versions of (4)–(6) is the same, it may or may not be marked. At the same time, this is not a matter of free variation: There is a clear semantic contrast between (a) and (b). In (a) the speaker distances herself from the first proposition, whereas in (b) she truly endorses it. In (b) she considers the evidence, whatever its source, to be knock-down reliable.

- (4) a. John must have been here recently. There are his footprints.
b. John was here recently. There are his footprints.
- (5) a. Allegedly, “Mädchen” is neuter. It says so in the dictionary.
b. “Mädchen” is neuter. It says so in the dictionary.
- (6) a. John seemed to eat the cake. At least, that’s what I saw.
b. John ate the cake. I saw that.

The question arises of whether “evidentiality markers” in English really do not (only) mark the evidence source, but (also) its reliability. In the proposed theory of *Evidence* as a rhetorical relation, it only makes sense to give evidence for propositions the speaker truly endorses. At first glance, this seems to contrast with the fact that evidentiality marking typically has a weakening or hedging effect. In this light, we wonder how the contrast between (a) and (b) is expressed in languages that do have an obligatory evidentiality category and what this might tell us about the relationship between evidentiality, modality, and hedging.

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