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学 位 論 文 内 容 要 旨

応用言語学研究科
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学位論文題目 Possibilities in discourse: The pragmatic presuppositions of epistemic *may/might* and *must*

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学位論文要旨

The object of this dissertation is to identify the commitments communicated by assertions using epistemic *may/might* and *must*, and to explain how they are different from one another, how they are alike, and how they are affected by and help shape the surrounding discourse. The proposal within consists of an account of how the semantics of epistemic modal propositions (Kratzer, 1977, 1981, 1991, 2012) interact with the assumptions contained in the common ground (Stalnaker, 1973, 1978, 1996, 2002) at the time of utterance, as mediated by the Cooperative Principle (Grice, 1989).

I show that the propositional content of modal assertions is systematically constrained, in terms of the modal base, by quantity demands. Factoring in the quantity demand results in modal assertions adding more to the common ground than would be predicted based on their truth conditional content alone. This has implications for many key areas in the literature on epistemic modals, including empirically adequate truth conditions, differentiating between subjectivity and objectivity, agreement and dissent facts, embeddability facts, and proffering speech act effects.

According to a possible worlds semantics of epistemic modals, epistemic modals denote that their embedded proposition (called **the prejacent**) is possible or necessary relative to Speaker's knowledge. According to the Stalnakerian model of assertion, an assertion is a proposal to add the truth conditional content of the asserted proposition to the common ground. As such, accepting an assertion of a modal proposition should result in "the prejacent is possible/necessary according to Speaker's knowledge" being added to the common ground. This should not result in any change in commitment toward the prejacent by other discourse participants. However, this is not what actually happens.

(1) *There's a knock at the door*

"That may/must be Bob." -- "I see. ?I doubt it."

Hearer indicates that she accepts Speaker's assertion by uttering "I see." Then, given that she has not gained new knowledge between uttering the two sentences, she contradicts herself by asserting that the prejacent is doubtful (*May* can sometimes express doubt, especially when pronounced with marked intonation. We are not concerned with that reading at the present time.) That is, empirically, what is taken to be added to the common ground by accepting a modal assertion is more than just "the prejacent is necessary/possible according to Speaker's knowledge". It is taken to change the prejacent's status relative to the acceptor's knowledge, contrary to the theoretical expectations.

In general, an assertion can be taken as a public commitment by Speaker to the content of the asserted proposition which, by virtue of having being publicized, will prompt Hearer to also commit to it. Since we perceive that Hearer's accepting Speaker's assertion changes Hearer's own beliefs regarding the prejacent, we must be interpreting Speaker's assertion as a commitment to more than just the prejacent's status relative to his own internal knowledge. What is Speaker committing himself to by uttering a modal assertion?

An investigation of this question can start by identifying the similarities and differences of modal assertions with non-modal assertions and questions. According to standard possible worlds semantics, necessity operators like *must*, when interpreted in their epistemic sense, express that the prejacent is the only possibility given what Speaker knows. This would entail that Speaker knows that the prejacent is true. In following, *must* can be compared with non-modal assertions, which denote that the asserted proposition is true.

Possibility operators like *may/might*, in their epistemic sense, express that the prejacent may be either true or false according to what Speaker knows. In following, *may/might* can be notionally compared with polar questions, which also express that Speaker does not know if the proposition being asked is true or false. However, neither of the above two comparisons adequately captures what Speaker commits himself to by virtue of *may/might* or *must* assertions.

(2) Question:	Did John leave already?	No, he didn't.
(3) Possibility assertion:	John may have left already.	! No, he didn't.
(4) Necessity assertion:	John must have left already.	!! No, he didn't.
(5) Non-modal assertion:	John left already.	!!! No, he didn't.

In the above four interactions, a rejection of the uttered proposition by Hearer is

increasingly confrontational, indicated by the number of exclamation marks. There seems to be a gradient of strength of commitment toward "John left already", where questions express no commitment to either truth or falsity and non-modal assertions express commitment to truth. The perceived strength gradient among (2)-(5) suggests that, unlike questions, *may/might* and *must* express some positive commitment by Speaker to "John left already", but unlike non-modal assertions, one which is not to its truth. What can Speaker be committed to if not to the truth of the proposition?

Kratzer proposed a "human" modality semantics, in part to account for the difference between (4) and (5). Within this framework, epistemic *may/might*, along with many other natural language lexical items which express that an embedded proposition is possible, denote "stereotypical" possibility. A stereotypically possible proposition is more than just epistemically possible, it is an epistemically possible "normal state of affairs." Meanwhile, *must* denotes "stereotypical necessity," which means that the prejacent is the only epistemically possible "normal state of affairs." If we accept Kratzer's proposal, we might suppose that Speaker positively commits himself to stereotypical possibility/necessity by making epistemic assertions. This works well for necessity but runs into problems with possibility.

Suppose that "John left" is a normal state of affairs if John has other plans, but "John did not leave" is a normal state of affairs if there is a girl he likes at the party. In order to utter (4), Speaker must know that John has other plans and cannot know that there is a girl John likes at the party (in reality, there may or may not be one). In general terms, Hearer can deduce that Speaker has positive evidence for the prejacent, and that he believes that there is not any positive evidence for the complement of the prejacent. This does not entail a commitment to the prejacent being true but is nonetheless a positive commitment toward it. However, the question remains why Hearer's accepting that there is positive evidence for the prejacent and not for the prejacent's complement according to Speaker's knowledge should translate to a commitment by Hearer to the prejacent.

There is an additional hurdle for (3). Our semantics does not require even any positive evidence. The only way for (3) to be false, given that Speaker does not know that the prejacent is false, would be if "John did not leave" were humanly necessary. This means that Speaker can truthfully utter (3) as long as he doesn't know whether there's a girl at the party that John is interested in. In general terms, the only thing Hearer can deduce semantically from a true human possibility proposition is that Speaker does not know anything that contradicts the prejacent being a normal state of affairs (e.g. there being a girl John is interested in at the party).

Since semantically all that is required to utter *may* is a lack of knowledge, there appears to be no reason why Speaker would have to be interpreted as having a positive commitment toward the prejacent by uttering a *may* assertion, and so human modality

does not offer an explanation for why possibility assertions should express a stronger commitment than polar questions. For possibility, even before pursuing the question of how to translate Speaker's commitment to Hearer's commitment, we have the problem of finding a commitment by Speaker at all.

Both the question of what commitments of Speaker are expressed by modal assertions, and of how commitments to a prejacent based on the contents of Speaker's knowledge can translate to commitments to the prejacent by Hearer in the common ground can be answered by factoring in the quantity demand. I propose that, based on Hearer's expectation as per the Cooperative Principle that Speaker is trying to update the common ground, Hearer can derive non-modal pragmatic presuppositions, i.e. non-modal propositional beliefs to which she takes Speaker to be committed, based on the denotation of the modal forms he uses.

The process of derivation of pragmatic presuppositions is dependent on the state of the common ground. In order to obey the quantity maxim, Speaker must believe he is making a contribution to the common ground in order to make a felicitous assertion. If the common ground entails only that a proposition may or may not be true, a human modality assertion can add that there is positive evidence for it. Given this, since Hearer expects Speaker to obey the quantity maxim, Hearer expects that Speaker, since he has made a modal assertion, must believe he has positive evidence.

For human necessity, this results in his modal commitments regarding his knowledge being taken to be non-modal commitments regarding the actual world by virtue of the Cooperative Principle. Meanwhile, possibility propositions only require a lack of knowledge to be true, but since possibility assertions have to update the common ground, Hearer assumes that Speaker would not assert a human possibility if he did not have positive evidence for the prejacent. If Hearer takes an assertion as indicative of Speaker having such positive evidence and accepts it, she will be committed to the belief that positive evidence exists in the common ground. Thus, human modality semantics as constrained by the quantity maxim allows an explanation of the positive commitment Speaker expresses by modal assertions and of how Speaker's commitments can translate to common ground commitments.

A necessity assertion commits Speaker to believing there is positive evidence for the prejacent but not for the prejacent's complement. That is, it produces two non-modal pragmatic presuppositions which are taken as commitments by Speaker. A possibility assertion only commits Speaker to believing there is positive evidence for the prejacent, but leaves him uncommitted to the prejacent's complement. That is, it too produces a non-modal pragmatic presupposition which is taken to be a commitment by Speaker, but it also produces a non-committal pragmatic presupposition.

The two pragmatic presuppositions produced by modal assertions, one regarding the prejacent and one regarding the prejacent's complement, raise what I call "modal

issues" in discourse. A modal issue can be taken as a proposal to narrow down the possible "possibility configurations" for a given proposition with respect to the common ground. By human modality semantics, a proposition and its complement can both be stereotypically possible (e.g. John's having left already may be stereotypically possible because he has other plans at the same time as it is astereotypically possible because there's a girl he's interested in at the party). This allows for five different possibility configurations in which a proposition and its complement can be: [1] $p_{\text{impossible}} \ \& \ \neg p_{\text{epi.necessary}}$, [2] $p_{\text{epi.necessary}} \ \& \ \neg p_{\text{impossible}}$, [3] $p_{\text{stereo.possible}} \ \& \ \neg p_{\text{stereo.necessary}}$, [4] $p_{\text{stereo.necessary}} \ \& \ \neg p_{\text{stereo.possible}}$, [5] $p_{\text{stereo.possible}} \ \& \ \neg p_{\text{stereo.possible}}$. Possibility configurations can be narrowed down through exchange of related beliefs by discourse participants as to whether there is positive evidence for the prejacent and for the prejacent's complement, or, if their knowledge allows, by whether they are epistemically necessary (entailing truth) or impossible (entailing falsity).

In this way, epistemic modals enable individuals to refine the common ground regarding a given proposition in a systematic way even when they lack the knowledge necessary to determine whether that proposition is true or false. Making and interpreting epistemic modal assertions are tripartite processes in which semantics, the common ground and the Cooperative Principle all play separate but integrated roles. An accounting of such a process can only be achieved through an understanding of the interface between all three components.