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# On the Semantic Contrast between Epistemic
## *May* and *Can*

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## I. Introduction

What I am concerned with in this paper is the question of incomplete synonymy between two epistemic modals: *may* and *can.* The two modals, in their epistemic senses, are often considered equivalent in that they both express possibility. Consider the following pair:

(1) John *may* be there now.

(2) John *can* be there now.

Both (1) and (2) might be paraphrased by *possible.*

(3) It is *possible* that John is there now.

The paraphrase indeed shows that the first two sentences might be equivalent, but are they completely synonymous? On closer investigation it will be found that there is a subtle but important difference between the possibilities expressed by (1) and (2).

Possibility is one of the central notions of traditional modal logic, and it is indispensable for the description of the meanings of the epistemic modals such as *may* and *can.* This logical notion, however, has to be reformed when we deal with the practical use of the modals. For in the actual utterances some pragmatic element or the subjectivity of the speaker plays an important part in the meanings of the modals. In this paper we would reconsider the definition of the notion of possibility in terms of pragmatics and attempt to account for the subjective aspect of the meaning of epistemic modals.

The discussion in the present paper would show us how important it is to make a clear distinction between a bare

proposition and an assertion of it; the latter closely relates to an illocutionary force of an utterance or the speaker's subjectivity[1], while the former is quite independent of them. Therefore the description of epistemic modality, which must be captured at the level of assertion, not proposition, would prove to be one of the most important problems in defining the boundaries between semantics and pragmatics.

## II. Two types of epistemic modality

Lyons (1977) distinguishes two types of epistemic modality: subjective and objective. For the distinction he gives an account on the basis of his tripartite analysis of an utterance. Throughout this paper we will examine his definition of epistemic modality and make use of it to describe the difference of epistemic *may* and *can*.

According to Lyons, there are three components in the structure of an utterance: the neustic, the tropic and the phrastic, or in our terms, the performative and modal components and the proposition. The structure might be figured like (4).

(4) (I say so < it is so [p] >)

the neustic the tropic the phrastic

Subjective and objective epistemic modality can be accounted for in terms of the qualification of the I-say-so and it-is-so components. The definition could be summarised in the table below.

Table 1.

|  | I-say-so | it-is-so |
|---|---|---|
| subjective epistemic modality | qualified | (unqualified) |
| objective epistemic modality | (unqualified) | qualified |

1) To the term 'subjectivity' Akatsuka (1977) attaches the sense of 'unique ego's expression' or 'expression belonging to a particular mind'.

By introducing a convenient notational system (5) which corresponds to (4), Lyons describes the subjective and objective epistemic modality more simply.

(5) . . p

The first full stop stands for the unqualified neustic, I-say-so; the second full stop stands for the unqualified tropic, it-is-so, and *p* for the phrastic, the proposition. In terms of the formula, subjective epistemic modality is represented as follows:

(6) poss . p

(6) can be read as 'Possibly, it is the case that *p*.' The objective epistemic modality is represented as:

(7) . poss p

The reading is 'I say that possibly it is the case that *p*.'

As for the system, we will present three major problems with which we are concerned throughout this paper. First we want to ask what modal expressions will correspond to these formulae. With this question let us observe the following example:

(8) It *may* be raining in London.

Lyons assumes that this utterance is ambiguous, that is, in (8) *may* can express not only subjective but also objective epistemic modality. But can any epistemic modal have these two interpretations?

The second problem concerns another formula of modality he suggests.

(9) . . (poss p)

Unlike (6) and (7), (9) includes the form (poss p), which indicates a proposition that is derived by applying poss to *p*. Lyons explains that the formula represents complete objectifi-

cation of modality.[2] But it is quite unclear how to distinguish between the two kinds of objective epistemic modality (7) and (9).

The last problem is how the distinction of the two kinds of epistemic modality, subjective and objective, could be demonstrated by the empirical arguments. In order to verify the distinction, it is necessary to investigate closely the phenomena which reflect the characteristics of each epistemic modality.

In the latter part of this paper we will discuss the semantic contrast between epistemic *may* and *can,* and the discussion would give us some valuable suggestion as to the problems stated above.

III. The semantic contrast between *may* and *can*: subjective and objective possibility

The difference between the meanings of epistemic *may* and *can* is adequately discussed in Leech (1971). He presents the following pair and discusses their semantic and contextual difference.

(10) The pound *may* be devalued.
(11) The pound *can* be devalued.[3]

It is the difference of 'factuality' that we can find between the meanings of the two examples: the first has the factual meaning and the second has the theoretical meaning. Accord-

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2) In contrast with the 'completely objectified' epistemic modality, Lyons proposes, (7) can be thought of as being derived from (6) by 'partial objectification'.

3) To clarify the contrast between (10) and (11) different paraphrases can be given to them.
    i)   It is possible that the pound is devalued. (=10)
    ii)  It is possible for the pound to be devalued. (=ll)
        = It is possible to devalue the pound.

ing to Leech, (11), including *can*, can be uttered at any time since it only describes a theoretical possibility of the event, whereas (10), including *may*, expresses a factual possibility or the actual likelihood of the event and so it can only be uttered at a financial crisis.[4]

On the opposition of factual and theoretical possibility a further observation should be made: there is a difference in the speaker's participation in the meanings of the two modals. As for the meaning of *may*, the factual possibility, the speaker himself foresees the possibility and expresses it as his own opinion. Consequently we would refer to the possibility expressed by *may* as 'subjective possibility'. On the other hand, as for the meaning of *can*, the theoretical possibility, the speaker simply states an 'objective possibility'. Thus we would assume that there is a contrast of subjective vs. objective possibility between the meanings of epistemic *may* and *can*.[5]

To show that the assumption is valid we now investigate some semantic properties of *may* and *can* which are to reflect the contrast clearly. It has been pointed out that, in contrast with root modals, epistemic modals have some syntactic and semantic restrictions as to their behavior with tense, negation, question, etc. To be noted here is that epistemic *can* often escapes those restrictions while epistemic

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4)  Joos (1964) defines the meanings of epistemic *may* and *can* as 'contingent potentiality' and 'adequate potentiality' respectively. Contingent potentiality denoted by *may* expresses 'event is consistent with some of the circumstances but not all', and adequate potentiality denoted by *can* expresses 'event is consistent with all the circumstances'.

5)  The distinction of two types of possibility is proposed also in Hermerén (1978). He distinguishes POSS (1) and POSS (2). According to his account, 'POSS(1) may be said to indicate the speaker's view of the likelihood of an event occurring or having occurred,' and 'A sentence containing an exponent of POSS(2) indicates that there is (ungraded) possibility of the occurrence of an event or the existence of a state'.

*may* is always affected by them. Now let us demonstrate the point.

*A.* Past tense

Both *may* and *can* have a past tense form: *might* and *could,* but they are not equal with respect to the time reference. Consider the examples.

(12) What you say *might* be true.
(13) A situation like this *might* occur from time to time.
(14) Someday I *might* be worth murdering, but not now. — A. Christie, *A Murder Is Announced*

In these examples *might* does not refer to past time but to present time. This use of *might* is called a 'tentative use',[6] and it expresses a present possibility. Epistemic *may*, even if it is used in the past tense form, *might*, always refers to present time.[7]

With the examples (12)-(14) we should compare the following ones, which contain *could.*

(15) What you say *could* be true.
(16) In those days, a transatlantic voyage *could* be danger-ous. [Leech (1971)]
(17) "Why, I should say it was just as plain as plain *could* be. The man in my compartment was the murderer. Who else *could* he be?" — A. Christie, *Murder on the Orient Express*

*Could* in (15), like *might* in (12), is in a tentative use and expresses a present possibility. On the other hand *could*s in (16) and (17) all have the past time reference; they obviously represent a past possibility. For instance, (18) would be a rough paraphrase of (16).

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6) Palmer (1974) 5.3.3.
7) *Might* in (14) may be apparently considered to refer to future time, but it is not the case. In (14) the possibility, represented by *might*, refers to present time but the state or what is possible refers to future time; in other words, (14) represents the present possibility of a future state.

(18) In those days, it *was possible* for a transatlantic voyage to be dangerous.

Consequently it is argued that epistemic *can*, but not *may*, can be used for the past time reference in the past tense form. The fact would be summarised as in (19).

(19) Past tense form for past time: *May* (−), *Can* (±)

B. Negation

In relation to the scope of negation, the two modals, *may* and *can*, exhibit a striking contrast. Compare (20) with (21).

(20) He *may not* be serious.
/It is *possible* that he is *not* serious./

(21) He *can't* be serious.
/It is *not possible* that he is serious./

In (20), as the paraphrase shows, the modal is out of the scope of negation and *not* negates the proposition. On the other hand, in (21) *not* negates the modal itself or the modal is within the negative scope. Some further examples will follow:

(22) a. They *may not* come if it's wet.
/It is *possible* that they won't come if it's wet./

b. "But he *mayn't* have meant that to happen," interrupted Miss Bunner eagerly. "It may have been just a horrid sort of warning . . . ." − A. Christie, *A Murder Is Announced*
/But it is *possible* that he didn't mean . . ./

(23) a. He *can't* be working at this hour.
/It's *impossible* that he is working at this hour./

b. "It must come sometimes to 'jam today'," Alice objected. "No, it *can't*." said the Queen. − L. Carroll, *Through the Looking Glass*
/It's *impossible*./

As the examples show, *may* is outside the scope of negation, while *can* is included in it.

(24) Within the scope of negation: *May* (−), *Can* (+)

*C.* Question

It is well known that *may*, in its epistemic sense, does not occur in questions.

(25) *\*May* Mary be praying now?

(26) *\*May* John have been there yesterday?

But the question containing epistemic *can* is very natural.

(27) *Can* Mary be praying now?

(28) *Can* they have missed the bus?

Hence the question formation is also a restriction on the use of *may* but not *can.*

(29) Question: *May* (−), *Can* (+)

*D.* Hypothetical use

Finally we will consider the hypothetical meaning of the modals. The following examples, which include hypothetical *might* and *could,* with their paraphrases, are cited from Leech (1971).

(30)  a. If you loved me, I *might* marry you.

=b. If you loved me, it's *possible* that I *would* marry you.

(31)  a. If the astronauts momentarily lost radio contact with earth, the whole mission *could* be ruined.

=b. If the astronauts momentarily lost radio contact with earth, it *would* be *possible* for the whole mission to be ruined.

Leech (1971:118) explains the difference of hypothetical meaning between *might* and *could* as follows: '*might* ascribes unreality to that which is possible; while *could* ascribes unreality to the possibility itself.' Some further examples would clear up the point.

(32) a. She can tell you what *might* have happened and what ought to have happened and even what actually did happen. − A. Christie, *A Murder Is Announced*

/. . .what, it's *possible, would* have happened . . ./

b. . . . and he threw such a wailing note of agony into the weird music that, if we had not known it was a funny song, we *might* have wept. – J.K. Jerome, *Three Men in a Boat*

/. . ., it is *possible* that we *would* have wept./

(33) a. Had you come to me sooner, I *could* have cured you.

/. . ., it *would* have been *possible* for me to cure you./

b. There would be no point in collecting all the friends and neighbors just to make it (=shooting) more difficult. He *could* have shot her from behind a hedge in the good old Irish fashion any day of the week, and got away with it. – A. Christie, *A Murder Is Announced*

/It *would* have been *possible* for him to shoot her . . ./

These data indicate that in hypothetical use *may* is out of the scope of unreality but *can* is within it. Then we have (34) to summarise the fact.

(34) Within the scope of unreality: *May* (−); *Can* (+)

The semantic properties (A)-(D) discussed so far will be summarised in the following table.

Table 2.

|  | *May* | *Can* |
|---|---|---|
| *A.* Past tense form for past time | − | ± |
| *B.* Within the scope of negation | − | + |
| *C.* Question | − | + |
| *D.* Within the scope of unreality | − | + |

The table shows a striking contrast between epistemic *may* and *can* on the semantic properties presented above, and on closer examination we have to notice that the contrast distinctly

reflects the characteristics of subjective and objective possibility. Then we will investigate what each property suggests as to the meaning of the modals.

To start with, epistemic *may* does not have a past tense form for the past time reference. This shows that *may* expressing subjective possibility is directly dominated by the speaker and is outside the domain of tense; it is related to speaker-now. A similar conclusion will be. drawn from the other properties. Epistemic *may* is out of the negative scope, it is not used in questions and it is outside the scope of unreality in its hypothetical uses. These facts tell that the modal is the subjective expression of the speaker which can never be negated or questioned or hypothesized.

On the other hand, epistemic *can* escapes every restriction that epistemic *may* is subject to. *Can* has a past tense form for past time, it is within the scope of negation, it occurs in questions and it is included in the scope of unreality in hypothetical uses. From all these facts it follows that the possibility expressed by epistemic *can*, unlike that of *may*, is part of the propositional content and the speaker simply describes an objectively possible event.

In conclusion we assume that the semantic difference between the two epistemic modals *may* and *can* is adequately described in terms of the distinction between subjective and objective possibility; the former is directly related to the speaker's subjectivity and the latter is considered as an element of a proposition.

However, the contrast between the meanings of *may* and *can* could not be observed in every case, for each of the two modals often trespasses on the other's semantic territory. For example, epistemic *can,* especially in the negative form *can't,* frequently expresses subjective possibility.

(35) The boy *can't* have spoken English then.

/It is impossible that the boy spoke English then./

In contrast, some *may*s, though very rarely, represent objective possibility. Lyons (1977) accepts the following example:

(36) If it *may* be raining, you should take your umbrella.

Though in (36) *may* occurs in if-clause, where no subjective expression is permitted, this utterance is interpretable, according to Lyons, provided that *may* is taken to express objective, rather than subjective, epistemic modality. Although it is very doubtful whether (36) is acceptable, we would admit that some use of *may* could express objective possibility. Consequently we must restate the conclusion: the contrast between subjective and objective possibility corresponds to the essential semantic difference between epistemic *may* and *can*.

In the final place we will once again refer to the formulae that Lyons presents to describe the epistemic modality. As for objective possibility, as we have argued, we consider that it has to be captured at the level of proposition. Lyons proposes two types of objective epistemic modality, but we suppose that there is no need of such a distinction from our point of view. If we interpret the notion of proposition more loosely, we can include both objective epistemic modalities in one category.

As for subjective possibility, it is very difficult to incorporate it in the analysis of an utterance. Though we observe that subjective epistemic modality has some relation to the performative component (I-say-so) of an utterance, it is very questionable whether the description of Lyons is adequate, which is given with the qualification only of the performative component.

## IV. Conclusion

In order to explain the semantic contrast between epistemic *may* and *can* we have proposed the distinction between subjective and objective possibility. The distinction roughly corresponds to that of Lyons between subjective· and objective epistemic modality.

When we deal with the modality, it is important to distinguish the assertion from the proposition; in relation to the former but not the latter the modality performs its function, that is, the modal expressions have roles only in the actual utterance. In this sense, objective possibility, which can be thought to be a part of a proposition, may be considered not to fulfil the true function of the modality.

In the discussion of the epistemic modality the most difficult problem is how to formalize such a mentalistic notion as 'subjectivity'. Obviously the subjectivity of the speaker is in some way correlated with the illocutionary force of an utterance or the performative and other pragmatic elements, but it seems very hard to explicate their relations. It is expected that further studies will be made on the discussion.

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