On the Semantics of Korean modalized question

Arum Kang

Korea University / Seokwan 110A, Anam-ro 145, Seongbuk-ku, Seoul, Korea

arkang@korea.ac.kr

Abstract

The goal of the current study is to suggest a novel paradigm of epistemic modal operator originated from the disjunction. Our main data is Korean disjunction operator *nka* which forms a non-factual question. Examining how the modal effect in question is induced by *nka*, I propose that the prerequisite of *nka* brings about non-homogenous nonveridical (i.e. modal) spaces partitioned in equipoised epistemic spaces, thus there is no bias between them. I furthermore show how the distinct notions of disjunction, question, and possibility modal can be captured under the theory of nonveridical equilibrium (Giannakidou 2013, Giannakidou and Mari 2016).

1   Introduction

In the standard theories of question (Hamblin 1973; Karttunen 1977; Groenendijk and Stokhof 1984), the meaning of the question denotes a set of propositions (i.e. alternative possible answers to the question). The general purpose of information-seeking questions is to receive a true answer from the addressee by posing such a set of alternatives for consideration. Surprisingly, however, the question marked by *nka* in Korean concerns speaker's knowledge and issues, thus it reports on the *speaker's* consideration of a set of alternatives. In (1a), for instance, based on the fact that John had a very subtle smile in the context, the speaker conjectures that 'John is the winner' has a good possibility while acknowledging the negative

possibility at the same time. The statement is therefore marked by *nka*. It contrasts with the factual question marker *ni* in (1b) without such presumption by the speaker:

(1) *Context: Mary, a reporter, was waiting for John and Bill who were competing with each other for the win in the finals of the chess competition. After the match, John and Bill came out of the room. John had a very subtle smile and Bill had a poker face. Given their facial expressions, she raises the possibility that John might have won. Mary says:*

   a. *Con-i   wusungca-i-**nka**?*
      John-Nom   winner-be-NKA
      'Could John possibly be the winner?'
   b. *Con-i   wusungca-i-**ni**?*
      John-Nom   winner-be-Q
      'Is John the winner?'

I treat the *nka*-question in (1a) as a non-factual question (Jang 1999; C. Kim 2010, a.o.): as indicated in the use of 'possibly' in the translation, it is a question about the *possibility* of the content of the proposition, i.e., the speaker is asking whether it is possible that John won the game, rather than whether he actually won the game. The use of *nka* indicates the speaker's presumed awareness of asking a weaker question, and specifies the degree of certainty about the proposition in question, just like an epistemic modal. In this sense, I term the *nka*-question *modalized question* (MQ, henceforth). A MQ questions about the speaker's belief and knowledge, thus it raises a weaker inquiry than the regular unmodalized question.

30th Pacific Asia Conference on Language, Information and Computation (PACLIC 30)
Seoul, Republic of Korea, October 28-30, 2016

477

I argue that the epistemic modality of *nka* is initiated from its original function of disjunction operator. As shown below, *nka* coordinates two DPs in (2a) or two TPs in (2b):

(2) a. *Wusungca-nun   Con-inka   Pil-i-ta.*
       winner-Top   John-or   Bill-be-Decl
       'The winner is possibly John or Bill.
  b. *Con-i   wusungca-i-nka?*
       John-Nom   winner-be-NKA
       'Could John possibly be the winner?'

As indicated in the use of *possibly* in the translation, *nka* disjunctions are modalized (Choi 2011, a.o.). I assume that *inka*-disjunction in (2a) is a disjunction without overt modals in the sense of Zimmermann (2001) and Geurts (2005), interpreted as a list of epistemic possibilities. It asserts that the winner might be John or the winner might be Bill in a world w if and only if the proposition contains at least one world that is permitted in w.

In fact, MQs are pervasive in diverse languages, not genetically or geographically connected, and some light is shed on the topic from previous studies examining them under various labels. The common semantic denominator of these MQs is that the epistemic uncertainty is produced by the interaction of modal ingredients occurring in questions. To name a few, there are *darou-ka* 'MOD+Q' in Japanese (*self-addressing* question; Hara and Davis 2013), as=*há=k'a* 'SBJN+YNQ+INFER' in St'át'imcets (*conjectural* question; Littell et al. 2009, Matthewson 2010), and *na* 'SBJN' occurring in the interrogative in Greek (*epistemic subjunctive question;* Giannakidou, to appear). Above MQs have *double-layered* epistemic modal because they are morphologically decomposed into overt question markers and modal ingredients which contribute to form modalized non-factual questions. In Salish and Japanese the modal component is a modal marker; in Greek it is a subjunctive marker; in English it is *possibly, probably, might*, etc. Unlike the above MQs, however, the Korean MQ is notable in that the double-layered modal is achieved by a single element*, nka*. Our discussion on *nka* crucially hinges on the question of (i) how the semantic categories of MQs can be distinguished within the traditional domain of modality, and how they can be defined, and (ii)

how the seemingly distinct notions of disjunction, modal effect, and question are amalgamated in the single element *nka*.

To capture the semantics of double-layered modal, I argue that the *nka*-disjunction is based on modal-concord structure, positing an implicit possibility modal. The existence of default implicit modal in *nka*-MQs is evidenced by the fact that, when *nka* co-occurs with other modal verbs, it withdraws the otherwise strong modality of these verbs. For example, *nka* combines with biased (i.e. strong) possibility modal verbs such as evidential modal suffix *te* 'I saw that' (J. Lee 2008, a.o.) and strong possibility modal auxiliary verb *kes kath* 'look like' (Choi 1995, a.o), but no bias is indicated:

(3) *Con-i   wusungca-i-te-nka?*
    John-Nom   winner-be-INFER-NKA
    'Did I possibly see that John was the winner?'
(4) *Con-i   wusungca-i-n-kes kath-un-nka?*
    John-Nom winner-be-Rel-must-Rel-NKA
    'Could John possibly look like the winner?'

I take this to argue that the function of *nka* is to constrain the modal base, just as modal adverbs do. The distinct feature of its restriction, however, lies in the fact that *nka* partitions the modal base into equal spaces, i.e. $p \vee \neg p$ (polarity partition), and nullifies the bias.

I thus propose that three seemingly distinct notions of disjunction, question, and possibility modal can be unified under the framework of *nonveridical equilibrium* (Gianankidou 2013; Giannakidou and Mari (GM) 2016). The epistemic weakening in *nka*-MQs is obtained by the creation of non-homogenous nonveridical (i.e. modal) states partitioned in equipoised epistemic spaces.

The paper proceeds as follows: In section 2, I provide a brief recapitulation of nonveridical equilibrium. Exploring the basic properties of *nka* in Korean in section 3, I show that its function is akin to the modal-verb modifier restricting modal base. In section 4, I offer the semantic analysis of MQs, showing how a more comprehensive picture of MQs that I provide fits into the framework of nonveridical equilibrium. In section 5, I conclude with theoretical implications.

2 Theoretical backgrounds

Nonveridicality is placed at the heart of mood and modality (Giannakidou 1994 et seq.). Giannakidou assumes Kratzerian semantics for modals (Kratzer 1981, 1991), where modals take modal bases and ordering sources, and add one ingredient, the *Nonveridicality Axiom* that all modal bases are nonveridical. From the epistemic domain, I can move to generalize veridicality and nonveridicality to all kinds of modal spaces (sets of worlds), involving various kinds of modal bases. All modal bases are nonveridical spaces in that they do not entail the truth of the prejacent proposition. The (non)veridicality can be defined in terms of the properties of modal spaces:

(5) Veridical, nonveridical modal spaces
(sets of worlds) (Giannakidou 2014: (31))
(i) A set of worlds M is veridical with respect to a proposition p iff all worlds in M are p-words (Homogeneity): $\forall w'(w' \in M \rightarrow p(w'))$
(ii) A set of worlds M is nonveridical with respect to a proposition p iff there is at least one world in M that is a non-p world. (Non-homogeneity):
$\exists w', w'' \in M (w' \neq w'' \wedge (p(w') \wedge \neg p(w'')))$
(iii) A set of worlds M is antiveridical with respect to a proposition p iff M and p are disjoint: $M \cap p = \varnothing$

Nonveridicality is a precondition on modalities, as shown below:

(6) Nonveridicality Axiom of modals (GM 2016: (27))
MODAL(M)(p) can be defined only if the modal base M is nonveridical, i.e. only if M contains p and non-p worlds.

This axiom guarantees that MODAL p will not entail p, since there are also $\neg p$ worlds in M, and the actual world may be one of those. The modal base M intersects with p, but also contains non-p worlds. Following Portner 2009, she assumes the ordering sources and Best worlds (GM 2016 (28)(29)):

(7) a. *Ordering of worlds* – Portner 2009, p.65
For any set of propositions X and any worlds w,v: $w \leq_X v$ iff (i) for all $p \in X$, if v

$\in p$, then $w \in p$
b. For any set of propositions X, Best worlds as per X. $\text{Best}_X = \{w': \forall q \in X(w' \in q)\}$

Given an epistemic modal base M(i), Best is a function over M(i), in the sense of Portner:

(8) For any set of propositions X, Best worlds is a function over M(i) (GM 2016: (30)):
$\text{Best}_S M(i) = \{w' \in M(i): \forall q \in X(w' \in q)\}$

Best worlds consist of two basic parts: *support* and *bias*. Support is defined in (9). The Support function takes the modal base as its argument and returns a subset of it. The set of worlds returned is such that the propositions in the ordering source S are true.

(9) Support function (GM 2016: (31)):
$\text{Support}_S(M(i)) = X$ s.t. $X \subset M(i)$ & $\forall w' \in X$: $p(w')$

The support set is the inner domain of the modal base, and the modal base is its outer domain. The support function delivers the positive set of the nonveridical modal base.

The next is bias. Bias is defined in terms of a measure function μ, which takes sets as arguments and returns their sizes.

(10) A modal is biased iff (GM 2016: (32)):
$\mu(\text{Support}_S(M(i))) > \mu(M(i) \setminus \text{Support}_S(M(i)))$

This axiom guarantees that MODAL p will not entail p, since there are also $\neg p$ worlds in M, and the actual world may be one of those. The modal base M intersects with p, but also contains non-p worlds.

The nonveridical equilibrium is a state of fifty-fifty, and p and $\neg p$ are equal options. The nonveridical equilibrium can be generalized as follows:

(11) Nonveridical equilibrium
(with ordering sources) (GM 2016: (33))
A modal base M(i) is nonveridical equilibrium iff:
$\mu(\text{Support}_S(M(i))) \approx \mu(M(i) \setminus \text{Support}_S(M(i)))$

Nonveridical equilibrium characterizes possibility modals. It holds the nonveridical modal spaces, partitioned in equipoise, that are compatible with the speaker's belief, and indicates an equal possibility of its spaces given what the speaker's doxastic (or belief) world is: it conveys that the speaker considers both *p* sets and non-*p* sets equally possible. Ordering sources add information restricting sets of possibilities and creating support sets, thus privileging one subset of the modal base over its complement (¬*p*). In the state of nonveridical equilibrium, however, there is no preference towards the *p* or non-*p* worlds, no best worlds, and no support of *p*.

Thus far, I have overviewed relevant theoretical ingredients, showing how the theory of nonveridicality can incorporate the distinct notions of question, disjunction, and possibility modal. In what follows, I investigate the nature of *nka*-disjunction and show how nonveridical equilibrium offers an elegant analysis to capture the meaning of *nka*-marked MQs.

3   Core property of *nka*-disjunction

Given the full range of phenomena that correlate with the occurrence of *nka*, I suggest the semantic properties of *nka*-disjunction and show how it forms a MQ in this section. The core property of *nka*-disjunction is double-layered, where *nka* is a modal-verb modifier restricting the modal base induced by an implicit modal operator. I examine each property in detail and show how the disjunction marker can function as a special subspecies of epistemic modal markers.

I take the empirical evidence that *nka*-disjunction involves double layers of modality to assume that *nka*-disjunction involves modal concord. Modal concord refers to the phenomenon that a sentence in which a modal verb and a modal adverb occur is interpreted as if it contained only one (Halliday 1970, Lyons 1977, Huitink 2012, Annad and Brasoveanu 2010, a.o.), as shown in (12). When a modal verb combines with a modal adverb, the modal adverb fortifies the meaning of the modal verb:

(12) **Possibly** John **may** be the winner of the competition.
(13) **Possibly** John is the winner of the competition.
(14) John **may** be the winner of the competition.

If both *possibly* and *may* express modality, it is expected by compositionality that (12) makes a doubly modalized statement, whereas (13) and (14) involve only one layer of modality. In order to make iterated modalities entail a single modality, the relationship underlying the modal expressions in modal concord would have to be transitive and dense (Huitink 2012, (4)-(5)):

(15) a. $\diamondsuit\diamondsuit p \rightarrow \diamondsuit p$
   b. Transitivity: For all possible worlds *w, v, u*:
      if *wRv* and *vRu*, then *wRu*
   c. Density: For all possible worlds *w, v, u*:
      if *wRv*, then there is a *u*, s.t. *wRu* and *uRv*.

Modal adverbs are devices for domain restriction that come with selection restrictions concerning the modal force of the quantifier they combine with. They are not assuming modal concord as the result of certain modals being semantically vacuous (Anad and Brasoveanu 2010; Huitink 2012; Giannakidou and Mari 2016).

Modal concord of *nka* can be captured by positing an underlying argument structure of modals. This structure is realized explicitly when *nka* is present. The existence of default implicit modal in MQs is evidenced by the fact that *nka* restricts the modality of co-occurring overt modal verbs, especially biased possibility modals including the evidential modal suffix *te* 'I saw that' (J. Lee 2008, a.o.) in (16) and the epistemic modal auxiliary *kes kath* 'it looks like' (S. Choi 1995, a.o.) in (17). These modals mark the speaker's strong bias toward the content of prejacent proposition based on concrete evidence available in the context, which is revealed by their incompatibility with the low degree of commitment expressed by low probability adverbs such as *ama* 'maybe' or *hoksi* 'maybe/by any chance':

(16) Con-i   (*ama/*hoksi)
    John-Nom   maybe
    wusungca-i-**te**-la**.**
    winner-be-INFER-Decl
    '(I saw that) John was the winner.'
(17) Con-i   (*ama/*hoksi)
    John-Nom   maybe
    wusungca-i-n-**kes kath**-ta.
    winner-be-Rel-may-Decl
    'John may be the winner; John looks like the
     winner.'

Surprisingly, however, when *nka* combines with them, no such bias is detected:

(18) Con-i   (ama/hoksi)
    John-Nom maybe
    wusungca-i-**te-nka**?
    winner-be-INFER-NKA
    'Did I possibly see that John was the winner?'

(19) Con-i   (ama/hoksi)
    John-Nom maybe
    wusungca-i-n-**kes kath**-un-**nka**?
    winner-be-Rel-may-Rel-NKA
    'Could John possibly look like the winner?'

Nka is thus an integral component of modality indeed. Nullifying the bias to the prejacent proposition is expected in MQs, because the MQ presupposes equipoised partitioned epistemic space.

4   Semantics of MQ

Given what I have said about the properties of *nka*-disjunction thus far, it is plausible to assume that the meaning of *nka*-MQ is best represented as a partitioned two possibilities of p and $\neg p$, containing epistemic modals.

(20) $[[NKA(p)]]^w$ = {{that it is possible that p}, {that it is not possible that p}}

The speaker considers p and non-p worlds equally possible, and *no preference or bias* is given between them. I can argue that having 50% certainty can naturally be explained if the core reanalysis of *nka* necessarily occurs in a statement whose meaning consists of both p and non-p. As shown below, an *nka*-MQ is infelicitous in contexts with high possibility and low possibility, while felicitous in contexts with medium possibility:

(21) imsin-i-nka?
    pregnancy-be-NKA
    'Could it be possibly a pregnancy?'

(22) MQ and Degree of Certainty
a. High-possibility context (80-100%): It has been 1 year since my sister got married. One day, I visited her. She wanted to tell me about the surprise news. She showed me her pregnancy test kit. There were two lines on it. I say: continuation (21): #

b. Medium-possibility context (50%): It has been 1 year since my sister got married. One day, I visited her. She showed some symptoms that she was suffering from nausea and craved something sour. I say: continuation by (21): o.k.

c. Low-possibility context (0-20%): It has been 1 year since my sister got married. One day, I visited her. She told me that she wants a baby. I say: continuation by (21): #

The example in (22) suggests that in order for *nka* to be felicitous, the speaker must believe that the realization of the propositional content has a medium possibility given what she knows. The context is set up such that the speaker is uncertain about the truth of the proposition expressed by the sentence: the speaker does not know which of p (she is pregnant) and non-p (she is not pregnant) is true. However, if the evidence points too strongly, as in (22a), or too weakly, as in (22c), in favor of the proposition being true, *nka* becomes infelicitous. The contribution of *nka* thus involves approximately medium certainty. The speaker's presupposition on the medium possibility of the realization of the propositional content, I argue, is the reason why *nka* is used.

Given that *nka* yields medium possibility in speaker's epistemic states, I assume that the function of *nka* is a restrictor of modal base: there is an implicit modal which existentially quantifies over the set Bests (which is a subset of the modal base), and the modal base of MQs is partitioned into p and ¬p worlds with no ordering. Within the system of Giannakidou and Mari (GM 2016), the truth condition for *nka* will come out as follows:

(23) $[[\varnothing_{epistemic}(p)]]^{M,i}$ will be defined iff
    (i) the modal base M(i) is nonveridical;
    (ii) $\exists X \subset M(i)$ s.t. $\mu(X) \approx \mu(M(i) \setminus X)$
        (nonveridical equilibrium)
    if defined, $[[\varnothing_{epistemic}(p)]]^{M,i} = 1$ iff
    $\forall w' \in X$ s.t. $X \subset M(i)$ p(w')

I thus suggest that an appropriate interpretation of *nka* is obtained by considering the epistemic status of the speaker. The nonveridical modal base of *nka*-Q holds the nonveridical modal space, p and ¬p, which is compatible with the speaker's belief, and indicates an equal possibility of its spaces given what the speaker's doxastic (or belief) world

is. That is, the MQ conveys that the speaker considers both p and ¬p equally possible. Here, the modal base already forms a state of nonveridical equilibrium.

I therefore assume that the function of *nka* is analogous to that of an epistemic modal adverb, and translated as 'maybe' or 'possibly' in English, maintaining the default of the existential modal (adapted from GM 2016: (63)):

(24) $[[NKA]]^{M,i,\text{S-adv}}$ is defined iff
$\mu(NKA_{\text{S-adv}}(M(i))) \approx \mu(M(i) \backslash NKA_{\text{S-adv}}M(i)))$
Maintaining the default of the existential modal: the Support set the modal base (p-worlds) is approximately of the same size as the set of non-support worlds (¬p-worlds).

Nka expresses the speaker's perspective towards p by determining the size of equilibrium in the modal base, and has no effect on the equilibrium, since it returns a modal base equally partitioned between p worlds and non-p worlds. It is characterized as equipoised epistemic space, as follows (adapted from GM 2016: (64)):

(25) $[[NKA \varnothing_{\text{epistemic}}(p)]]^{M,i}$ will be defined iff
(i) the modal base M(i) is nonveridical;
(ii) there is a set X, X=Support$_S$(M(i)) and $\mu(X) \approx \mu(M(i) \backslash X)$ if defined,
$[[NKA \varnothing_{\text{epistemic}}(p)]]^{M,i,\text{S-adv}} = 1$ iff
$\forall w' \in \text{Support}_{\text{S-adv}}(M(i)): p(w')$

$NKA_{\text{S-adv}}(M(i))$ $M(i) \backslash NKA_{\text{S-adv}}(M(i))$
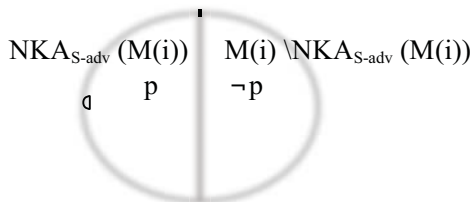   p   ¬p

Figure 1: Nonveridical equilibrium of MQ

The speaker has reduced the truth commitment by creating a nonveridical modal space, i.e. one that contains p and non-p worlds. The domains of non-veridical equilibrium are modal domains partitioned into p and non-p worlds. Unlike the typical partition, which is the result of an ordering (e.g. ordering sources with modals), the proposed semantics conveys that there is no best world in *nka*-questions, hence no ordering occurs.

5   Conclusions

In this paper, I identified a novel type of epistemic uncertainty on the proposition, i.e. MQs, and showed that the composite morpheme *nka* conveys a meaning more than just a possibility modal or a factual question marker: it is a modal-verb restrictor to maintain the default of the existential modal. I proposed that: (i) the epistemic constraints of MQs can be achieved by the presence of nonveridical modal space; and (ii) this modal space is partitioned in *equipoised epistemic space*. I furthermore showed how the challenge of capturing the precise semantics of such type of epistemic uncertainty can be met by capitalizing on the notion of nonveridical equilibrium. Korean facts importantly reveal that modalized questions do not form a uniform class with ordinary questions and that interrogative semantics alone cannot predict this epistemic uncertainty.

References

Anand, Pranav and Adrian Brasoveanu. 2010. Modal concord as modal modification. In Martin Prinzhorn, Viola Schmitt, and Sarah Zobel (eds.), *Proceedings of Sinn und Bedeutung* 14, 19-36.

Choi, Soonja. 1995. The development of epistemic sentence-ending modal forms and functions in Korean children. In J. Bybee & S. Fleischman (eds.), *Modality in grammar and discourse*, , 165-204.

Choi, Yoon-Ji. 2011. Correlation between disjunction and modality: focused on *inka* (written in Korean). *Journal of Korean linguistics* 60. 146-181.

Geurts, Bart. 2005. Entertaining Alternatives: Disjunctions as Modals. *Natural Language Semantics* 13(4). 383-410.

Giannakidou, Anastasia. 1995. Subjunctive, habituality and negative polarity items. *Semantics and Linguistic Theory* 5. 94-111.

Giannakidou, Anastasia. 1999. Affective dependencies. *Linguistics and Philosophy* 22. 367-421.

Giannakidou, Anastasia. 2013. Inquisitive assertions and nonveridicality. In Maria Aloni, Michael Franke, & Floris Roelofsen (eds.), *The dynamic, inquisitive, and visionary life of ϕ, ?ϕ and possibly ϕ, A festschrift for Jeroen Groenendijk, Martin Stokhof and Frank Veltman*, 115-126.

Giannakidou, Anastasia. To appear. The subjunctive as evaluation and nonveridicality, epistemic subjunctive, and factive-as-emotive. In Blaszack et al. (eds.), *For: Mood, Aspect and Modality: What is a linguistic Category?* University of Chicago Press.

Giannakidou, Anastasia and Alda Mari. 2016. *The semantic roots of positive polarity: epistemic modal verbs and adverbs*. ms., University of Chicago.

Groenendijk, Jerson and Stokhof, Martin. 1984. *Studies in the Semantics of Questions and the Pragmatics of Answers*. University of Amsterdam Ph.D. dissertation.

Geurts, Bart. 2005. Entertaining alternatives: Disjunctions as modals. *Natural Language Semantics* 13(4). 383-410.

Halliday, Michael Alexander Kirkwood. 1970. Functional diversity in language as seen from a consideration of modality and mood in English. *Foundations of Language* 6. 322-361.

Hamblin, Charles Leonanrd. 1973. Questions in Montague grammar. *Foundations of Language* 10. 41-53.

Hara, Yurie and Christopher Davis. 2013. *Darou* as a deictic context shifter. In Kazuko Yatsushiro and Uli Sauerland (eds.), *Proceedings of Formal Approaches to Japanese Linguistics* 6 (FAJL 6), 41-56. Cambridge, MA: MITWPL.

Hara, Yurie. 2013. On the interaction among sentence types, bias, and intonation: a rating study. In *Proceedings of Glow in Asia IX*.

Huitink, Janneke. 2012. Modal concord: a case study of Dutch. *Journal of Semantics* 29. 403-437.

Jang, Youngjun. 1999. Two types of question and existential quantification. *Linguistics* 37. 847- 869.

Kang, Arum. 2015. *(In)definiteness, disjunction and anti-specificity in Korean: a study in the semantics-pragmatics interface*. University of Chicago Ph.D. dissertation.

Kang, Arum and Suwon Yoon. 2016. Two types of epistemic ignorance in Korean. In Patrick Farrell (eds.), *The proceedings of the Linguistic Society of America* Vol. 1 (2016), 21. 1-15 (DOI: http://dx.doi.org/10.3765/plsa.v1i0.3723), Linguistic Society of America.

Karttunen, Lauri. 1977. Syntax and semantics of questions. *Linguistics and Philosophy* 1. 3-44.

Kratzer, Angelika. 1981. The notional category of modality. In Hans-Jürgen Eikmeyer & Hannes Rieser (eds.), *Words, worlds, and Context*, 38-74. Berlin: de Gruyter.

Kratzer, Angelika. 1991. Modality. In von Stechow & Wunderlich (eds.), *Semantics: an International Handbook of Contemporary Research,* 739-650. Berlin: de Gruyter.

Kim, Chonghyuck. 2010. *Korean Question Particles Are Pronominals: A transparent Case of Representing Discourse Participants in the Syntax*. http://ling.auf.net/lingBuzz/001157/

Lee, Jungmee. 2008. The Korean evidential *-te:* a modal analysis. In *Empirical Issues in Syntax and Semantics* 7. 1-25.

Littell, Patrick, Lisa Matthewson and Tyler Peterson 2009. *On the semantics of conjectural questions*. Paper presented at the MOSAIC Workshop (Meeting of Semanticists Active in Canada), Ottawa.

Lyons, John. 1977. *Semantics.* Cambridge: Cambridge University Press.

Matthewson, Lisa. 2010. Cross-linguistic Variation in Modality Systems: The Role of Mood. *Semantics and Pragmatics 3*. 1-74.

Portner, Paul. 2009. *Modality*. Oxford University Press.

Zimmerman, Thomas Ede. 2001. Free choice disjunction and epistemic possibility. *Natural Language Semantics* 8. 255–290.