Interpretation of the Scope Relation between Modality and Negation: A Cross-Linguistic Perspective*

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Abstract
This paper discusses the proposal of the scope relation between modality and negation made by de Haan (1997) within the Principles and Parameters (P&P) framework. He proposes two strategies for expressing the relative scope between modality and negation, the Modal Suppletion Strategy and the Negative Placement Strategy. I claim that the differences between the two strategies are derived from a lexical property of modal elements in languages. I also argue that the basic word order of a language is correlated to the strategy used in the language.

Keywords: scope relation between modality and negation, modal suppletion strategy, negative placement strategy, categorial status, basic word order.

1. Introduction

It is not an easy task to determine how to express the scope relation between modality and negation in a sentence containing a modal element and a sentential negative marker.[1] de Haan (1997) discusses this problem from a typological point of view. He defines scope in terms of overt c-command relations: an operator has scope over a certain domain if that operator c-commands that domain (de Haan (1997: 12)). However, the scope relation is not always determined by overt c-command relations - there are some exceptions. He claims that there are two types of the exceptions for expressing the relative scope between modality and negation among languages, the *Negative Placement Strategy* (NPS) and the *Modal Suppletion Strategy* (MSS).

The first exception is characterized by cases in which the scope relation is expressed by the position of the negative marker, which is called the NPS. Look at the following examples from Italian. Sentences (1b) and (1c) are sentences that negate sentence (1a):

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[1] In this paper, the term *scope* is used to mean semantic scope.

(1) a. Gianni deve andare a Roma. **(MOD(p))**[2]
Gianni dovere-3sg-Pres go-Inf to Rome
'Gianni must go to Rome.'

b. Gianni deve non andare a Roma. **(MOD(NEG(p)))**
Gianni dovere-3sg-Pres NEG go-Inf to Rome
'Gianni mustn't go to Rome.' (de Haan (1997:13))

c. Gianni non deve andare a Roma. **(NEG(MOD(p)))/**
Gianni NEG dovere-3sg-Pres go-Inf to Rome **(MOD(NEG(p)))**
'Gianni needn't/mustn't go to Rome.' (ibid.: 12)

In sentence (1b), where the modal element *deve* precedes and overtly c-commands the negative marker *non*, it unambiguously takes wide scope over the negative marker. In sentence (1c), on the other hand, we get ambiguity even though the negative precedes and c-commands the modal. We do not have narrow scope of the negative in terms of the overt c-command relation. de Haan (1997) describes this in terms of Negative Transportation (NT), where the negative moves before the modal without affecting the semantic interpretation of the sentence.

The second exception is characterized by the cases in which the scope relation is expressed by means of a modal element itself, which is called the MSS. An example of a language employing the MSS is English. Sentences (2b) and (2c) are the sentences that negate sentence (2a):

(2) a. John must fly to New York tomorrow. **(MOD(p))**
b. John must not fly to New York tomorrow. **(MOD(NEG(p)))**
c. John need not fly to New York tomorrow. **(NEG(MOD(p)))**
(Quirk et al. (1985: 794-796))

In (2b), the modal element *must* takes wide scope over the negative marker *not*, where the modal precedes and c-commands the negative. For the modal to be in the scope of the negative as in (2c), on the other hand, the modal *need* is required, though it precedes and c-commands the negative. de Haan (1997) describes this in terms of Modal Suppletion, which means that different scope relations are expressed by different modal elements.[3]

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[2] In this paper, I will use the following notation:
MOD: modality, NEG: negation, p: proposition, POS: possibility, NEC: necessity. The parentheses express the scope relation. For example, the notation *(MOD(NEG(p)))* means that modality takes wide scope over negation and negation takes wide scope over the proposition.

[3] I am not concerned with suppletion in terms of logical equivalences in this paper, for logical suppletion is a universal property and it can occur in all languages. It has no relation to the difference between the MSS and the NPS. See Appendix.

In an attempt to explain why there are these two types of strategies, i.e., the MSS and the NPS, he points out the correlation between these strategies and the basic word orders of the languages shown above. According to his generalization, while NPS languages show an uniformity in terms of basic word order, *SVO*, MSS languages do not.

There arise two problems in the argument made by de Haan (1997). The first problem is concerned with his description of the scope relation between modality and negation in terms of the two strategies pointed by de Haan (1997). He does not explain why NT occurs in (1c) or why the modal *need* is obligatorily in scope of the negative *not* in (2c). He only describes the existence of these phenomena. Furthermore, there are many exceptions to the MSS. In English, it is only the suppletion of *need not* that can be explained in terms of the MSS. Look at the following sentences:

(3) a. John may/can come tomorrow. **(MOD(p))**
b. John may not/can not come tomorrow. **(MOD(NEG(p)))**
c. John may not/can't come tomorrow. **(NEG(MOD(p)))**
(de Haan (1997: 60))

The scope relation in sentences (3b) and (3c) cannot be explained by the MSS. *May not* expresses both wide and narrow scope of the negative, though, by analogy of the sentences in (2), we predict that suppletion should take place in sentence (3c), in which the negative marker does not overtly c-command the modal element.[4] As for negation of the modal *can*, the different scope is expressed by a different negative form: the contracted forms *can't* and *cannot* preferably express wide scope of the negative, and the non-contracted form *can not* expresses narrow scope of the negative. de Haan (1997) describes these as the exceptions of the MSS language and claims that these modals take ambiguous scope with respect to the negative marker because of their lexical property. He only points out these exceptions, and does not explain why they occur.

The second problem is concerned with de Haan's (1997) generalization about the correlation between the strategies and basic word orders. He does not discuss why the languages that have a basic word order other than SVO do not use the NPS, or why English uses not the NPS but the MSS though it is an SVO language.

This paper discusses the two problems within the Principles and Parameters (P&P)

[4] de Haan (1997) observes that we get ambiguity in the relative scope between the modal *may* and the negative *not* at least in written English. However, different types of interpretation of modality may have different relative scopes with respect to negation. *May not* preferably expresses wide scope of the modal in epistemic modality and narrow scope of the modal in deontic modality. In this paper, I adopt de Haan's (1997) observation (See footnote 5.), but the semantic distinction of modality needs to be refined in detail for further research.

framework. In section 2, I will discuss the first problem, taking English and Italian as examples. I will describe the scope relation between modality and negation in terms of c-command at the LF representation and claim that the difference in the strategies the languages use is derived from the difference in categorial status of modal elements in the languages. In section 3, I will discuss the second problem, examining SOV languages, German and Japanese, and argue that the languages have recourse to the MSS because they cannot use the NPS for reasons related to the basic word order *SOV*. Section 4 will provide concluding remarks.

2. The MSS vs. the NPS in SVO Languages

2.1 Theoretical Background

Before we begin the discussion, let us consider syntax and the interpretation of modality and negation within the P&P framework, discussing three things. The first thing to be discussed is the clause structure of a sentence containing a modal element and a negative marker.[5] Within the P&P framework, a clause has a projection IP, which is decomposed into several functional projections. In reference to the split IP hypothesis proposed by Pollock (1989), it can be said that tense has a distinct projection TP and a sentential negative marker is identified as NegP. A modal element is identified as ModP.[6] The relative height of these clausal functional projections is controversial, but I assume the following hierarchy. I also assume that this hierarchy is universal:

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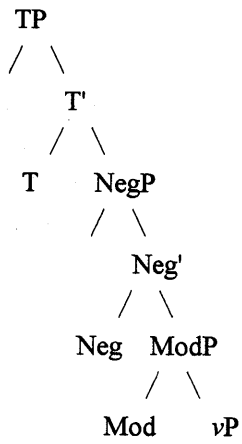
[5] de Haan (1997) and Yamamoto (2001) classify modality into epistemic and deontic modality, but I will not refer to the semantic distinction of modality unless it plays an important role in discussing syntax and the interpretation of modality, for example, in Japanese in Section 3.2.

[6] Cinque (1999) proposes more elaborate functional projections and argues for the existence of a fixed hierarchy of clausal functional projections. I simplify his argument and propose one clausal functional projection *ModP* for a modal element.

(4)



The second thing to be discussed is the properties of modal elements and negative markers. Modal elements are assumed to have the categorial feature [+Mod]. They are divided into two types according to their inflectional patterns and selectional property. Modal elements in English show inflectional change corresponding to T, but no person/number agreement. They are base-generated in Mod and assigned the categorial status *Modal Auxiliary*. Modal elements in Italian, on the other hand, have the inflectional change of person/number as well as tense, and behave like main verbs, as seen in the verb *deve* in (1). I assign the categorial status *Modal Verb* to the modal elements that have not only [+Mod] but also a categorial V feature. I also assume that modal verbs take clausal complements, adopting Rizzi's (1982) analysis. Given their inflectional pattern, both modal auxiliaries and modal verbs move to adjoin to T from the position where they are base-generated in overt syntax. I give the properties of modal elements in the following way:

(5) Modal elements have the categorial feature [+Mod].
   a. Modal auxiliaries are base-generated at Mod and overtly move to adjoin to T.
   b. Modal verbs have the categorial feature [V] and take clausal complements. They are base-generated at V and overtly move to adjoin to T.

For the discussion of negation, I adopt the analysis made by Haegeman (1995). As mentioned above, a sentential negative marker is identified as NegP. There are a variety of ways of morphologically realizing NegP. In French, for example, sentential negation is expressed by the bipartite negative markers *ne...pas*. *Ne* is generated in the head position of NegP and *pas* is a negative operator in [Spec,NegP]. Both the head and the specifier are filled with phonologically non-null elements:

(6) Jean ne$_i$ mange [$_{NegP}$ **pas** [$_{Neg'}$ t_i [de chocolat.]]]
Jean NEG eat-3sg-Pres NEG chocolate
'Jean does not eat chocolate.' (Haegeman (1995: 27))

In sentence (6), the head *ne* moves and adjoins to T because of its clitic nature. In Italian, the sentential negative marker *non* is also generated as the head of NegP. When only the head position is filled with the phonologically non-null element, [Spec,NegP] is filled with a phonologically non-overt negative operator:

(7) Gianni non$_i$ telefona [$_{NegP}$ **Op** [$_{Neg'}$ t_i [a sua madre.]]]
Gianni NEG telephone-3sg-Pres to his mother.
'Gianni does not telephone to his mother.' (ibid.: 200)

In sentence (7) as well as sentence (6), the negative head *non* adjoins to T because of its clitic nature. English has two sentential negative markers, *not* and its contracted form *n't*. *Not* is a negative operator in [Spec,NegP]. When *not* is in [Spec,NegP], the head is filled with a null element with a NEG feature. *N't* is the head of NegP and [Spec,NegP] is filled with the phonologically non-overt operator. It adjoins to T because of its clitic nature:

(8) a. John does [$_{NegP}$ **not** [$_{Neg'}$ **NEG** [eat chocolate.]]] (ibid.: 180)
b. John hasn't$_i$ [$_{NegP}$ **Op** [$_{Neg'}$ t_i [left yet.]]] (ibid.: 189)

The negative markers are licensed in terms of the NEG-criterion, which requires a spec-head configuration between a negative head and a negative operator within NegP. In (6) and (8a), the overt operator is in the spec-head configuration with the trace of *ne* or with a null head with a NEG feature. In (7) and (8b), the traces of the negative heads, which adjoin to T, are in the spec-head configuration with the non-overt operator.

Given the above, I divide the properties of sentential negative markers into the following three types:

(9) Negative markers in NegP are morphologically realized in one of the following three ways:
a. Both the specifier and the head are filled with overt negative markers.
b. Only the head is filled with an overt negative marker.
c. Only the specifier is filled with an overt negative marker.

In (9a) and (9b), negative markers assigned head status adjoin to T because of their clitic nature.

Third, let us discuss the scope interpretation of modality and negation. The scope of a syntactic element is, in general, defined as the set of nodes that it c-commands at the LF-representation. Modal elements move to T from Mod in English and from V in Italian. Let us assume that they are interpreted either at the raised position or at the trace positions. I assume that sentential negative markers are interpreted at the operator position, i.e., [Spec NegP], whether it is filled with an overt negative marker or not.

Given the definition of the absolute scope of modality and negation, let us consider their relative scope. Aoun and Li (1989) present arguments for the Scope Principle for the relative scope of quantifiers in (10):

(10) *The Scope Principle*
A quantifier A can have scope over a quantifier B in case A c-commands a member of a chain containing B.

I assume that the scope relation between a modal and a negative is determined on the basis of the scope principle in (10). The principle (11) below states that this principle holds for elements other than quantifiers:

(11) A scope element A can have scope over a scope element B in case A c-commands a member of a chain containing B.

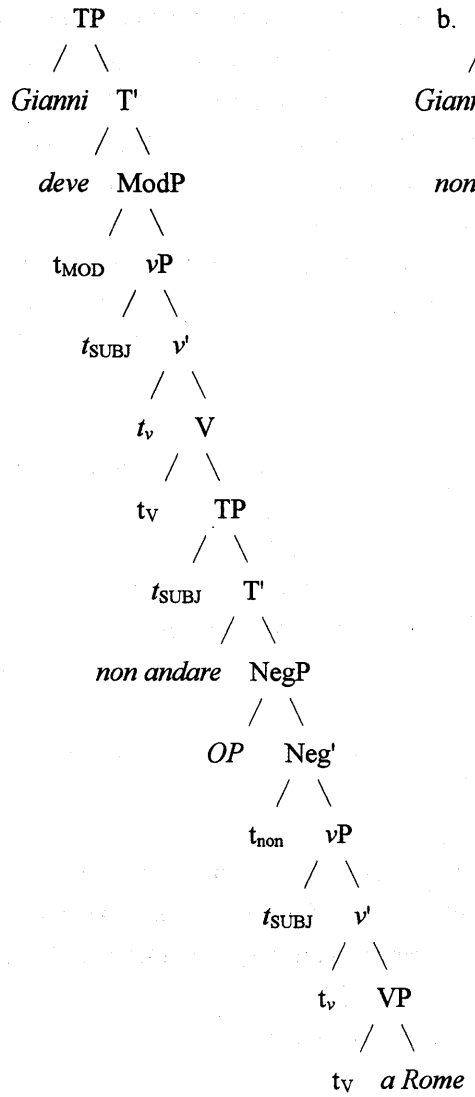
According to (11), a negative marker takes wide scope over a modal when it c-commands the position where the modal element is interpreted. A modal element takes wide scope over a negative marker, on the other hand, when it c-commands the operator position of NegP.

2.2 Syntactic Analysis on the MSS and NPS in SVO Languages

Given the assumptions about the syntax and the interpretation of modality and negation, let us discuss the differences between the MSS in English and the NPS in Italian pointed out by de Haan (1997). First, let us discuss Italian as an NPS language. Since a modal element in Italian has the properties in (5b), there are two positions where NegP can occur, i.e., in the matrix clause and in the embedded clause. The Italian negative marker *non* has the property in (9b). Taking these into consideration, I give the following structures to the sentences with a modal and a negative in Italian:[7]

[7] In this paper, I assume the movement of the modals as adjunction, not substitution, as shown in Section 2.1. In the tree diagram, however, I simplify this movement as shown in the movement of the modal *deve* in (12). I use this simplified representation of the movement of modals in the rest of this paper.

(12) a.



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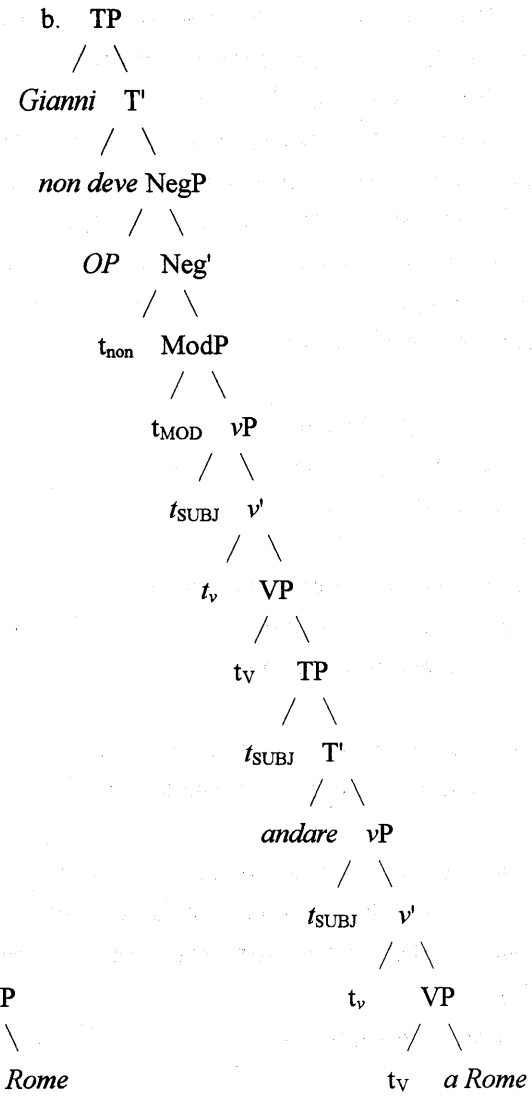

The structures in (12a) and (12b) correspond to the sentences in (1b) and (1c), respectively.[8,9] We have an unambiguously narrow scope interpretation of the negative in (12a) if we assume that NegP is generated in the embedded clause and the negative follows the modal verb. The

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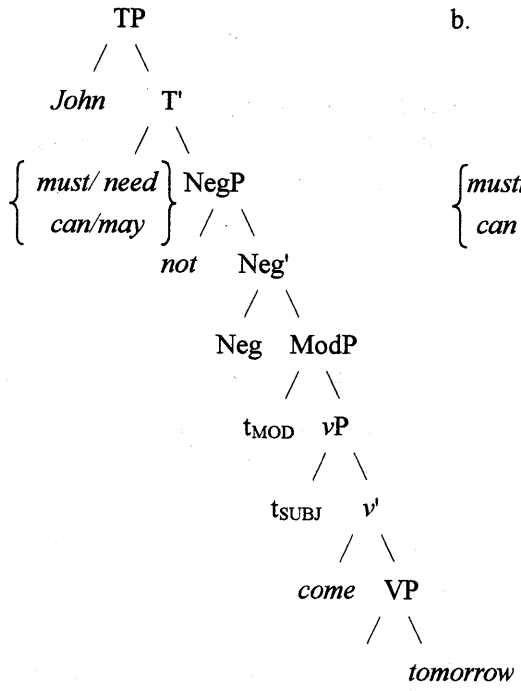
[8] Here we are faced with a potentially serious problem as to the proposal that both a verb and a negative move to T: a violation of head movement constraint (HMC). Belletti (1990) adopts a hypothesis presented by Moritz (1989) in order to solve the problem. Moritz (1989) claims that the described derivation gives a well-formed representation, although derivationally it would be incompatible with HMC, which is assumed to be a LF principle.

[9] Belletti (1990) claims that the derivation of the infinitival form of a verb proceeds in the same way as that of the finite form with the verbal root moving to the highest inflectional head (Belletti (1990: 71)). I adopt her claim and assume that an infinitival verb moves to T.

non-overt negative operator is always c-commanded by the modal verb and so is in the scope of the modal verb. If we assume that NegP is situated in the matrix clause in (12b), on the other hand, we get an ambiguity according to (11). When the modal verb is interpreted at the head of its chain, i.e., at the matrix T, and c-commands the negative operator, we have a narrow scope interpretation of the negative. When the modal is interpreted at the trace of the modal verb, it is in the scope of the negative.

Second, let us discuss English as an MSS language. Since English modal elements have the properties in (5a), the sentences in (2) and (3) have a mono-clausal structure. The negative marker *not* shows the characteristics in (9b), and the contracted form *n't* has the properties in (9c). Given these assumptions, the sentences containing a modal and a negative have the following structure:

(13) a.



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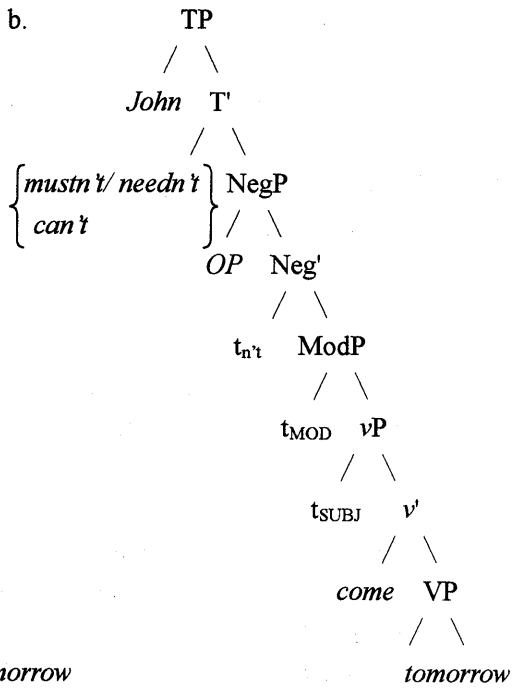

In (13), NegP occurs only in one position and the structure is similar to that in (12b). We incorrectly predict that we get both wide and narrow scope interpretations of the negative in both (13a) and (13b). Narrow scope of the negative is obtained when the modal is interpreted at the raised position T, whereas a wide scope interpretation of the negative is obtained when the modal auxiliary is interpreted at the trace position *Mod*. The relative order between the modal and the negative is fixed, i.e., Mod-Neg. Since the position of the negative does not determine the scope relation between modality and negation in English, different modal forms are used for expressing the different scope. It must be discussed what

forms are required for expressing a certain scope relation in the MSS languages. In order to discuss this problem, I adopt Israel's (1996) claim about the polarity sensitivity of modals. He claims that modal auxiliaries such as *need* and *can* are negative polarity items (NPIs), and *must* is a positive polarity item (PPI). It is generally said that NPIs are c-commanded by a negative marker in their clause but PPIs are not. Narrow scope of the negative is expressed by *must not*, in which the modal is interpreted at the raised position. *Need* as an NPI is interpreted at the trace position and in the scope of the negative. If we assume that *may* is neither an NPI nor a PPI, we can interpret it either at its raised position or at its base position. Taking the polarity sensitivity of modals into consideration, we solve the first problem raised in section 1. The modal forms treated as exceptions by de Haan (1997) are explained in terms of the polarity sensitivity, as is the suppletive form *need*.

3. The Correlation between the MSS/NPS and Basic Word Orders

In this section, I will investigate SOV languages such as German and Japanese, which are treated as MSS languages, and discuss how the basic word order is correlated to the MSS or the NPS. I will claim that these languages use the MSS because their basic word order prevents them from using the NPS.

3.1 German

de Haan (1997) claims that German is an MSS language. When a sentence containing the modal element *müssen*, which correspond to *must* in English, is negated, the suppletive form is used:

(14) a. Du mußt in die Stadt gehen. **(MOD(p))**
you müssen:2sg:Pres:Ind in the city go:Inf
'You must go to the city.'

b. Du brauchst nicht in die Stadt zu gehen. **(NEG(MOD(p)))**
you brauchen:2sg:Pres:Ind NEG in the city to go:Inf
'You needn't go to the city.'

c. Du mußt nicht in die Stadt gehen. **(NEG(MOD(p)))/**
you müssen:2sg:Pres:Ind NEG in the city go:Inf **(MOD(NEG(p)))**
'You needn't/mustn't go to the city.' (de Haan (1997: 73))

In (14b), we find the suppletive form *brauchst nicht* when the modal is in scope of the

negative, as the suppletive form *need not* in English.[10] When we look at sentence (14c), we get an ambiguity: *mußt nicht* expresses wide scope or narrow scope of the negative, as *non dovere* in Italian.

From the sentences in (14), German has the similarity both with English and with Italian. Which type of the language does German belong to, an MSS language or an NPS language? If it is an MSS language as de Haan (1997) claims, why does it have the similarities with an NPS language? In order to discuss these problems, let us begin with the discussion of the properties of modal elements and a negative marker in German, as we did in examining English and Italian. Because modal elements in German have inflectional patterns of main verbs, I assume that modal elements in German behave like main verbs. I provide a piece of supporting evidence for the assumption that the modals take a clausal complement:

(15) a. [$_{VP}$ nicht hingehen t_v] kann$_v$ jeder t_{VP}
NEG there-go *können:3sg:Pres:Ind* *everybody*
'Not go there is something that everybody can do.'

b. *[$_{VP}$ dem Mann das Buch t_v] gab$_v$ er nicht t_{VP}
the man *the book* *geben:3sg:Past:Ind* *he* *NEG*
'He didn't give the man the book.'

c. *[$_{VP}$ der Schwester zu bezahlen t_v] versprach$_v$ jeder t_{VP}
to-the sister *to pray* *versprechen:3sg:Past:Ind* *everyone*
'Everyone promised his sister that they would pray.' (Büring (1997: 187-188))

According to Büring (1997), the unacceptability of (15b) and (15c) may tell us that constituents containing V traces cannot undergo remnant movement. If this is on the right track, we incorrectly predict that the sentence (15a) should not be acceptable. Hence, VP topicalization in (15a) must not contain the trace of *können* and the correct structure should be as follows:

(16) [$_{VP}$ nicht hingehen] kann jeder t_{VP}

In (16), the negative marker *nicht* is associated with the main verb *hingehen*, not *können*. Given these facts, I assign the categorial status *Modal Verb* to modals in German, according to (5b).

The negative marker *nicht* is assigned operator status in NegP by Haegeman (1995). As the negative operator *not* in English, *nicht* has the property in (9c).

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[10] The modal element *brauchen* takes a complement either without the infinitival marker *zu* or with the infinitival marker. For the detailed discussion, see Wurmbrand (1998: 324-325).

Based on the above discussion, let us discuss whether German is an MSS language or an NPS language. Given the assumption that modal elements in German are modal verbs which have the properties in (5b), it is predicted that NegP occurs in two positions and that the differences in the structural position of NegP are reflected in the relative order between the modal verb and the negative, as in Italian. Thus German is apparently an NPS language.

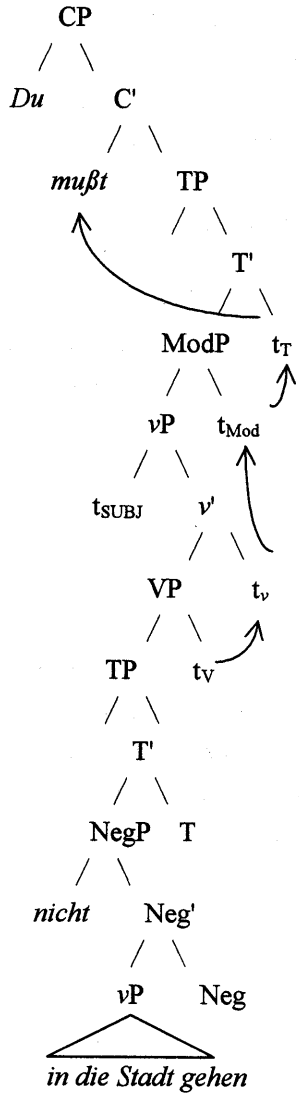
The prediction above is incompatible with de Haan's (1997) claim that German is an MSS language. In order to discuss whether German is an MSS language or an NPS language, let us consider the structures of sentence (14c), repeated here:

(17) Du mußt nicht in die Stadt gehen.

For the discussion of the syntax of German, it is taken into consideration that German is a V2 language with SOV base order.[11] SOV order shows up in most embedded clauses, while, in matrix clause, some constituent is topicalized to the specifier of CP and the finite verb is moved to C. In sentence (17), the subject *Du* is topicalized to [Spec,CP], and the modal verb *mußt* is moved to C. We get the ambiguity of the structure of sentence (17), i.e., the structure in which NegP is in the embedded clause as shown in (18a), and the structure in which NegP is in the matrix clause as in (18b):

[11] I adopt the traditional assumption about the syntax of German, incompatible with Kayne's (1994) anti-symmetric syntax.

(18) a.



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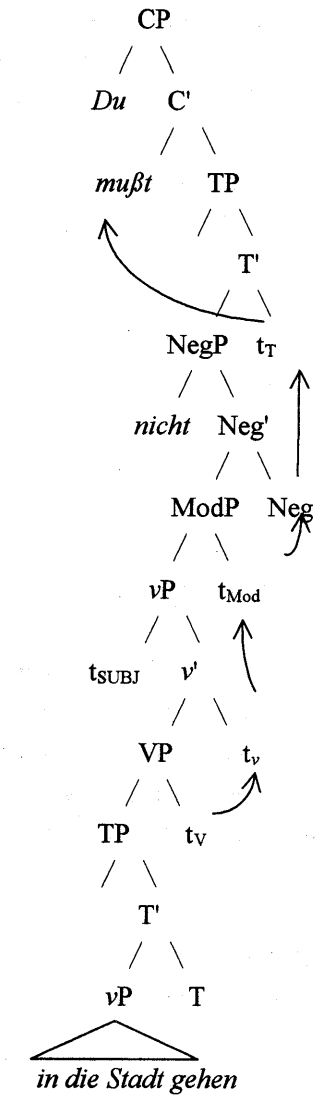

In (18a), the modal *mußt* c-commands the operator of NegP and *mußt nicht* expresses unambiguously narrow scope of the negative, like *dovere non* in Italian. In (18b), we get an ambiguity, as *non dovere* in Italian.[12] The modal *mußt* expresses wide scope over the negative *nicht* when it is interpreted at the raised position where it c-commands the negative

[12] Büring (1997) claims that though *nicht müssen* is ambiguous between *(MOD(NEG(p)))* and *(NEG(MOD(p)))*, the former reading disappears if the sentence has the following intonation:
(i) Du /MUSST NICHT\ so viel rauchen **(NEG(MOD(p)))**
In order to express narrow scope of the negative, the suppletive form in terms of logical equivalences, *nicht dürfen*, is used. (As for logical equivalences, see Appendix.) However, since some speakers allow the reading of *(MOD(NEG(p)))*, the preference seems to be dialectal.

operator. It is in scope of the negative when it is interpreted at the trace position c-commanded by the negative. However, the relative linear order between the modal and the negative in (18a) and (18b) is the same, i.e., *Mod-Neg*, and we cannot tell which structure sentence (17) has. Since the surface linear order between the modal and the negative in German does not reflect the structural position of NegP, the relative scope between the modal and the negative is not determined by the position of the negative. The NPS is not available in German. In order to disambiguate the relative scope between modality and negation, German has recourse to the MSS. Thus German is an MSS language. Wide scope of the negative can be expressed by the suppletive form *nicht brauchen*, which corresponds to *need not* in English.[13] The suppletive form is used for avoiding the scopal ambiguity of *nicht müssen.*

3.2 Japanese

3.2.1 Logical Suppletion and Wide Scope of the Negative

de Haan (1997) does not discuss Japanese in detail, but it is predicted that it is an MSS language because its basic word order is SOV. Before discussing whether this prediction is correct, let us consider the lexical properties of Japanese modal elements that I am concerned in this paper. Modal elements in Japanese that seem to semantically correspond to modal auxiliaries in English consist of concatenation of several morphemes, unlike those in English, Italian and German:

(19) *Epistemic Modality*

a.	*-kamoshirenai*	'*may/can*'
b.	*-chigainai*	'*must*'
c.	*-hazuda*	'*must*'
	Deontic Modality	
d.	*-te(mo)ii*	'*may/can*'
e.	*-nakutewaikenai*	'*must*'
f.	*-bekida*	'*must*'

I assume that the six modal elements in (19) have the categorial feature [+Mod].[14] For their

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[13] Wurmbrand (1998) argues that *brauchen* is different from other modal verbs in German in that when it combines with an infinitive, it is a negative polarity item.

[14] Japanese modal elements that I am concerned with in this paper consist of concatenation of several morphemes. For example, *-kamoshirenai*, *-chigainai* and *-nakutewaikenai* contain the negative morpheme *-nai*:

inflectional pattern, the modals that end with *–nai* are treated as adjectives and the modals that end with *-da* are treated as adjectival verbs. In order to discuss the selectional property of these modals, look at the following sentences:

(20) a. Kare-wa ki-ta kamoshirenai.
he-Top come-Past may-Pres
'He may have come.' (Moriyama et al. (2000: 47))

b. Boku-wa kokoni kagi-o oi-ta hazuda.
I-Top here key-Acc put-Past must-Pres
'I must have put the key here.' (ibid.: 48)

In (20), both *-kamoshirenai* and *-hazuda* contain a past tense in their complements. These modal elements seem to take clausal complements, as in Italian and German. Taking it into consideration that modal elements in Japanese behave like adjectives or adjectival verbs and take clausal complements, I assign them the categorial status *Modal Adjective* or *Modal Adjectival Verb*. They are base-generated at the head of AP or AVP.

Sentential negation in Japanese is expressed by the negative marker *–nai*. Let us assume that it is base-generated as the head of NegP, which has the property in (9b).

Given the categorial status of modal elements, let us discuss whether Japanese is an MSS

(i) a. *ka - mo shire nai*
fuku-joshi (Part) kei-joshi (Part) hon-dooshi (V) jo-dooshi (AUX)

b. *chigai - nai*
meishi (N) keiyooshi (Adj)

c. *naku - te - wa - ikenai*
keiyooshi (Adj) setsuzoku-joshi (Part) kei-joshi (Part) kei-yooshi (Adj)

d. *te(mo) - ii*
joshi (Part) keiyooshi (Adj) (Obunsha Kokugo-jiten (1986))

'*-Nai*' denies '*-ka-*' in '*-kamoshirenai,*' which shows the speaker's low degree of confidence in the truth of the proposition. '*-Nai*' denies '*-chigai-*' in '*-chigainai,*' whose meaning is the denial of the proposition. Anyway, they as a whole express modal meanings that correspond to *may* or *must* in English.

-Bekida and *–hazuda* seem to be made up of the following concatenation of morphemes:

(ii) a. *hazu da*
meishi (N) jo-dooshi (AUX)

b. *beki da*
meishi (N) jo-dooshi (AUX)

They are made up of two morphemes: a noun, which expresses the speaker's high degree of confidence in the truth of the proposition, and an auxiliary verb, whose meaning is the speaker's conclusion that the proposition is true. However, they as a whole express the modal meaning, which correspond to *must* in English.

In this paper, I do not consider in detail the internal structures of these modal elements. It is an interesting issue how these modals are grammaticalized from the historical point of view, but I leave it for further research.

language or an NPS language. Because, as in Italian, Japanese modal adjectives and modal adjectival verbs take a clausal complement, NegP occurs either in the matrix clause or in the embedded clause. From this, it follows that Japanese is an NPS language like Italian, and the scope relation between modality and negation is reflected in the surface linear order between the modal element and the negative marker. This is, however, incompatible with the prediction above that Japanese is an MSS language because its basic word order is SOV. In order to discuss whether Japanese is an MSS language or an NPS language, let us consider the following sentences:

(21) a. Kare-wa kuru kamoshirenai. **(MOD(p))**
he-Top come may-Pres
'He may be come.'

b. Kare-wa ko-nai kamoshirenai. **(MOD(NEG(p)))**
he-Top come-NEG may-Pres
'He may not be come.

c. *Kare-wa kuru kamoshirenaku-nai. ***(NEG(MOD(p)))**
he-Top come-Pres may-NEG-Pres
' He can't come.'

Sentences (21b) and (21c) are the negated sentences of sentence (21a). In sentence (21b), the negative marker *–nai* precedes the modal adjective *–kamoshirenai* and takes narrow scope with respect to the modal adjective. On the other hand, in sentence (21c),*-nai* follows the modal adjective and takes wide scope over the modal, which is unacceptable. Wide scope of the negative cannot be expressed by sentence (21c).

Sentence (21c) shows that the scope relation is not reflected in the relative linear order between the modal and the negative in Japanese. However, the negative can follow the modal element, however, as shown in sentence (22c):

(22) a. Taro-wa byooin-ni iku bekida. **(MOD(p))**
Taro-Top the hospital-to go must
'Taro must go to the hospital.'

b. Taro-wa byooin-ni ika-nai bekida. **(MOD(NEG(p)))**
Taro-Top hospital-to go-NEG must
'Taro must not go to the hospital.'

c. Taro-wa byooin-ni iku bekide-nai. **(MOD(NEG(p)))**
Taro-Top hospital-to go must-NEG
'Taro must not go to the hospital.'

The negative precedes the modal adjectival verb *–bekida* and takes wide scope over it in sentence (22b), as in sentence (21b). It is worth to noticing that sentence (22c) is acceptable despite the fact that the negative *–nai* follows the modal. However, sentence (22c) is interpreted with the wide scope of the modal over the negative. Thus, though the negative marker can precede or follow the modal element in Japanese, the relative linear order between the negative and the modal does not express their scope relation.

What renders sentence (21c) unacceptable? It can be ascribed to the constraint which prohibits a sequence of the negative morphemes, *-naku-nai*. The effect of this constraint is observed in the constructions other than *–kamoshirenakunai* in sentence (21c). Look at the following sentences:

(23) a. Kare-wa ashita kuru.
he-Top tomorrow come-Pres
'He will come tomorrow.'
b. *Kare-wa ashita ko-naku nai.
he-Top tomorrow come-Pres NEG NEG
'He will come tomorrow.'
(24) a. Kare-wa kashikoi.
he-Top intelligent-Pres
'He is intelligent.'
b. *Kare-wa kashikoku-naku nai.
he-Top intelligent-Pres NEG NEG
'He is intelligent.'
(25) a. Kono hana-wa kireida.
this flower-Top beautiful-Pres
'This flower is beautiful.'
b. *Kono hana-wa kireide-naku nai
this flower-Top beautiful-Pres NEG NEG
'This flower is beautiful.'

The (b) examples of (23) – (25) are unacceptable. They all violate the constraint on the adjacent combination of the negative morphemes, *-naku-nai*.[15] From the discussion above, we conclude that Japanese is not an NPS language because the relative linear order between the modal and the negative does not reflect their scope relation.

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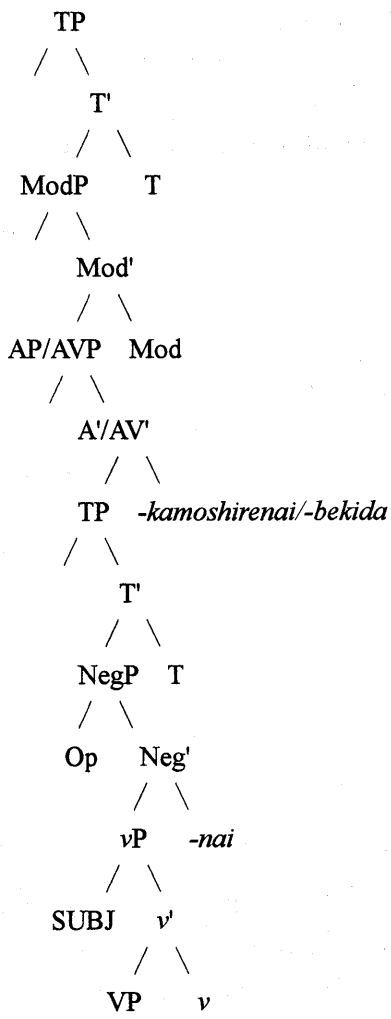
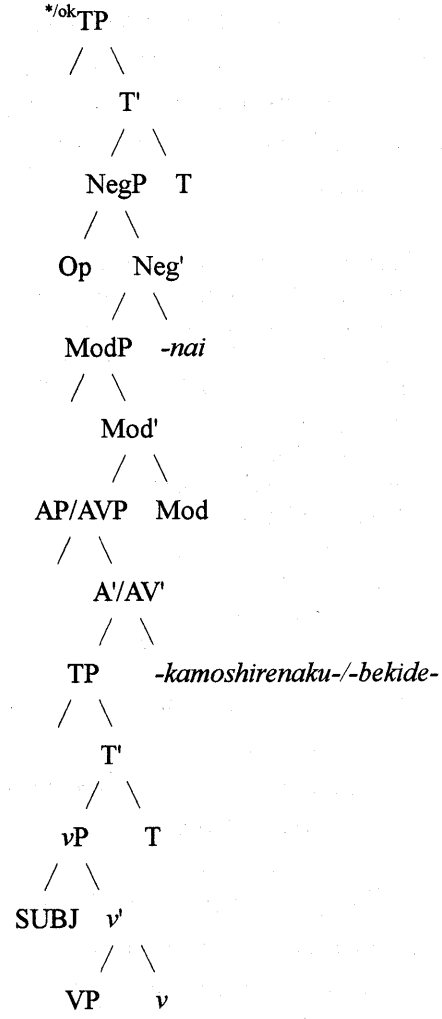
[15] The constraint on the adjacent combination of the same item is pointed out in other languages. For example, McCawley (1998: 323-325) claims that the double *–ing* construction is not allowed:
(i) a. It began to rain.
a.' It began raining.
b. It was beginning to rain.
b.' *It was beginning raining. (McCawley (1998: 323))
Sentence (b') has the same meaning as the sentence (b), but it is unacceptable because it contains the double *–ing* construction.

At this point, it is important to discuss how this observation is captured in our analysis. Let us consider the structures of the sentences in (21) and (22). Because Japanese is an SOV language, a sentence which contains the modal adjective ending with *–nai* does not have the structure in which NegP is in the matrix clause, as shown in (26b):

(26) a.



b.



In (26a), the modal always c-commands the operator position of NegP and takes wide scope over the negative. In (26b), it is predicted that the modal is in scope of the negative because the operator of NegP c-commands the modal. However, the negative form of the modal adjective is not allowed because of the constraint on the adjacent combination of the negative morphemes, and the modal adjectival verb expresses unambiguous wide scope over the

negative even when it precedes the negative.[16] Wide scope of the negative cannot be expressed in terms of structure (26b), in which NegP is in the matrix clause.

In Japanese, wide scope of the negative is expressed mainly by the suppletive forms. Consider the following sentence, for example:

(27) Kare-wa ko-nai ni-chigainai. **(NEC(NEG(p)))**
he-Top come-NEG must-Pres
'He can't come.'

In (27), *nai ni-chigainai* expresses the scope relation *(NEC(NEG(p)))*, which is logically equivalent to the scope relation *(NEG(POS(p)))*.[17] It is used as the suppletive form of *kamoshirenaku-nai* in sentence (21c). Wide scope of the negative in Japanese is expressed by the forms that has logically equivalent meaning. Thus Japanese is an MSS language.

3.2.2 Topic Marker *–Wa*

As discussed in the previous section, the modal adjectives do not allow the structure in which NegP is in the matrix clause, as in (22b), because the adjacent combination of the negative morphemes is prohibited. However, the insertion of the topic marker *–wa* between the two negative morphemes increase the acceptability of the combination:[18,19]

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[16] *-Bekidenai* could express wide scope of the negative if sentence (22b) has structure (26b) because NegP is in the matrix clause. It is an interesting problem why the modal adjectival verbs take wide scope over the negative whether NegP is in the matrix clause or I the embedded clause. In this paper, I focus on the modal adjectives which end with the negative morpheme *–nai*, so I leave it for further research.

[17] As shown in Appendix, Yamamoto (2001) investigates suppletive forms in terms of logical equivalences in all four languages discussed in this paper.

[18] All (b) examples in (23) – (25) also become acceptable by intervention of the topic marker *–wa* between the two negative morphemes. Consider the following sentences:

(i) a. Kare-wa ashita ko-naku wa nai. (23b)
he-Top tomorrow come-Pres NEG Top NEG
'He will come tomorrow.'

b. Kare-wa kashikoku-naku wa nai. (24b)
he-Top intelligent-Pres NEG Top NEG
'He is intelligent.'

c. Kono hana-wa kireide-naku wa nai. (25b)
This flower-Top beautiful-Pres NEG Top NEG
'This flower is beautiful.'

All the examples have the meaning of double negation. The detailed analysis of the structures of these sentences is beyond the scope of this paper, so I leave it for further research.

[19] McCawley (1998) cites Ross (1972) and claims that a normally unacceptable combination of *–ing*s becomes acceptable if the offending combination is broken up by a certain derivation:

(i) a. *I'm not keen on trying wrestling a bear.

(28) a. Kare-ga kuru kamoshirenaku *(wa) nai. **(NEG(POS(p)))**
he-Nom come-Pres may Top NEG
'He can't come.'

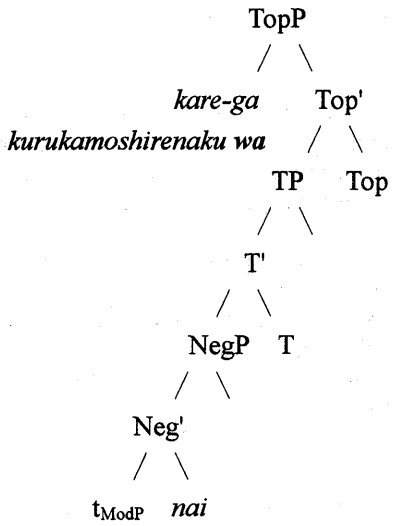
b. Taro-ga kaigi-ni shussekisuru nichigainaku *(wa) nai **(NEG(NEC(p)))**
Taro-Nom meeting-Dat attend-Pres must Top NEG
'Taro may not attend the meeting.'

c. Tabete wa ikenaku *(wa) nai **(NEG(NEG(POS(p))))**
eat Top can-NEG Top NEG
'You can eat.'

d. Tabe nakute wa ikenaku *(wa) nai **(NEG(NEG(POS(NEG(p)))))**
eat-NEG Top can-NEG Top NEG
'You need not eat.'

In (28), we get wide scope of the negative with respect to the modal. The topic marker *–wa* identifies an expression as occurring in [Spec,TopP]. I assume that ModP is topicalized and moves to [Spec,TopP]. The acceptable sentences which contain the combination *–naku-wa-nai* in (28) are topicalized versions of the unacceptable sentences involving the combination *–naku-nai*. We get structure (29) for the acceptable sentences in (28):

(29)



In (29), NegP occurs in the matrix clause.

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b. Wrestling a bear, I'm not keen on trying.
c. What I'm not keen on trying is wrestling a bear. (McCawley (1998: 324))
The acceptable sentences (b) and (c) are topicalized and pseudo-cleft versions of the unacceptable sentence (a).

Given structure (29), in which NegP is in the matrix clause, the negative can take wide scope over the modal. As in English and Italian, the position where scope of the modal is determined is either its raised position or its trace position, according to (11). It is generally said that topicalized constituents with the topic marker *–wa* are in scope of the negative. This generalization is appropriate if we interpret the topicalized constituents in (28) at their trace position. In this case, the modal adjectives or the modal adjectival verbs are c-commanded by the negative operator position, so it is possible that they are in scope of the negative.

4. Concluding Remarks

In this paper, I have reconsidered the proposal about the scope relation between modality and negation made by de Haan (1997) within the P&P framework. I have discussed two problems concerning the strategies, i.e., the MSS and the NPS. First, I have claimed that the difference between the MSS and the NPS is derived from the difference in the lexical property of modal elements in (5) if the languages have the basic word order *SVO*. In languages where modal elements have the properties in (5b), NegP can occur either in the matrix clause or in the embedded clause. In this case, the relative linear order between the modal and the negative can reflect the structural position of NegP. Therefore, we interpret the relative scope between modality and negation in these languages by looking at the relative linear order between the two elements. In other words, such languages use the NPS. On the other hand, in languages in which modal elements have the properties in (5a), the sentence containing the modal has a mono-clausal structure and NegP can only occur in the matrix clause. In this case, the relative linear order between the modal and the negative is fixed. Since the relative linear order between the modal and the negative does not reflect their relative scope in these languages, they use the MSS instead of the NPS.

Second, I have argued that some languages have recourse to the MSS because of their basic word order, though they are predicted to be NPS languages because modal elements have the properties in (5b) and there are two structural positions of NegP. In the SOV languages I have examined in this paper, the relative scope between the modal and the negative is not reflected in their relative linear order, and the NPS is not available in the languages. German is a V2 language, and modal verbs move to C. Thus the relative linear order between the modal verb and the negative is always *Mod-Neg*, whether NegP is in the matrix clause or in the embedded clause, and the relative scope between the modal and the negative is not determined by the position of the negative. In order to disambiguate their relative scope, the suppletive form is used. Because the adjacent combination of the negative morphemes is prohibited in Japanese, the sentence that has the structure in which NegP occurs in the matrix clause is unacceptable. In order to express wide scope of the

negative, Japanese uses suppletion in terms of logical equivalences. Japanese also expresses wide scope of the negative in terms of topicalization of ModP as well as the MSS. A sentence that has the structure in which NegP is in the matrix clause becomes acceptable by intervening the topic marker *–wa* between the two negative morphemes and avoiding their adjacent combination.

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Appendix: Suppletion in Terms of Logical Equivalences

As mentioned in the footnote 2, suppletion in terms of logical equivalences is a universal property. I give the forms used for modality accompanied by the negative marker in English, Italian, German and Japanese as below:

(1) a. Epistemic Modality

	(POS(p))	(NEG(POS(p)))	(POS(NEG(p)))	(NEC(p))	(NEG(NEC(p)))	(NEC(NEG(p)))
English	*may/can*	*may not/can't*	*may not/ can not*	*must*	***may not*** *(needn't)*	***can't*** *(mustn't)*
Italian	*potere*	*non potere*	*potere non*	*dovere*	***potere non/*** *non dovere*	*non dovere/* ***non potere/*** *dovere non*
German	*mögen/ können*	*nicht mögen/ nicht können*	*nicht können/ nicht müssen/ nicht brauchen*	*müssen*	*nicht müssen/ nicht brauchen*	***nicht können***
Japanese	*kamoshir enai*	*nai-nichigainai*	*nai-kamoshirenai*	*chigainai/ hazuda*	***nai-kamoshirenai***	*nai-nichigainai/ nai-hazuda*

b. Deontic Modality

	(POS(p))	(NEG(POS(p)))	(POS(NEG(p)))	(NEC(p))	(NEG(NEC(p)))	(NEC(NEG(p)))
English	*can/may*	*can't/may not*	*can not / may not*	*must*	*need not*	*must not*
Italian	*potere*	*non potere*	*potere non*	*dovere*	*non dovere*	*non dovere/ dovere non*
German	*dürfen*	*nicht dürfen*	-	*müssen*	*nicht müssen/ nicht brauchen*	*nicht müssen/* ***nicht dürfen***
Japanese	*te(mo)ii*	*tewaike-nai*	*naku-te(mo)ii*	*bekida*	*naku-te(mo)ii*	*naibekida/bekide nai/****tewa-ikenai***

In table (1), there is suppletion in terms of logical equivalences, i.e., *(NEC(NEG(p)))* ≡ *(NEG(POS(p)))* and *(POS(NEG(p)))* ≡*(NEG(NEC(p)))*.

There arise two problems in the table. First, Palmer (1995) tries to explain this suppletion in terms of economy. He claims that economy is achieved by using the logical equivalences. However, this is only appropriate with epistemic modality, where logic and language appear to coincide (Palmer (1995: 470)). In deontic modality, for example, *(NEG(POS(p)))*, which means denial of obligation, and *(NEC(NEG(p)))*, whose meaning is prohibition, are not identical in meaning, though they are logically equivalent. Taking it into consideration that there is logical suppletion in deontic modality as well as in epistemic modality, we must make an explanation for logical suppletion in deontic modality distinct from that in epistemic modality. Do we make the same explanation for logical suppletion both in epistemic modality and in deontic modality?

Second, suppletion tends to occur in the part of necessity: the modals that express possibility are used in the part of necessity as the logically suppletive forms. The direction of logical suppletion is an interesting issue, but I leave it for further research.