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## PREFACE

As far as is known, all languages have ways of expressing modality, i.e., notions of possibility, necessity, contingency, etc. But this pervasive phenomenon has so far been the object of little systematic linguistic analysis. In fact, investigators do not even agree on the scope of the term modality. Very roughly speaking, two kinds of modality have been distinguished, namely epistemic and deontic. The former involves the speaker's judgment as to the degree of certainty of an event or state of affairs being referred to. Deontic modality, on the other hand, has to do with such notions as obligation, permissibility and necessity. However, as useful as this distinction is, little is known so far concerning the linguistic patterns which express those ideas. It is clear that the modality systems of a great many languages will need to be thoroughly scrutinized and compared before any conclusions can be drawn as to their place in 'universal grammar.'

The papers included in this volume of the Kansas Working Papers in Linguistics were written by graduate students at the University of Kansas for a seminar on modality taught by Professor Choon-Kyu Oh in the spring of 1979. They deal with a variety of topics bearing on modality and with a variety of languages and language families. It is our hope that these papers will stimulate comments from colleagues at other institutions.

The Editors

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## STACKABILITY OF MODALITIES

Ines Senna Shaw

Abstract: This paper examines the stackability of the deontic modalities; permission, ability, obligation and necessity, in Portuguese, Malay, Korean and English. Principles are developed in the form of predictions about the possible logical combinations of these modalities and tested by means of sentences submitted to the judgment of native speakers. It was found that these principles and logical combinatory possibilities are applicable to these four languages, and it is concluded that there is a high probability of application to any natural language in which these modalities are grammatically realized.

### Introduction

This paper is a study of stackability or possible combinations of some deontic modalities such as permission, ability, obligation or imposed necessity, and plain or existential necessity. I will be trying to determine the principles which allow modalities to be stacked and whether these principles hold for different languages. Predictions regarding the logical combinations of stackable modalities are made and sentences, which are submitted to native speakers' judgment, are used to verify the accuracy of these predictions.<sup>1</sup> Used in this paper are the following languages and their corresponding language families:

English	:	Germanic	;	Indo-European
Portuguese	:	Italic	;	Indo-European
Korean	:	Altaic	;	Common North Asiatic
Malay	:	Malayan	;	Malayo-Polynesian

### The Stackability of Modalities

Permission modals require a source of permission. Therefore, there are two possible ways of stacking them:

- a)  $S_1 \diamond d + S_1 \diamond d$  \*
- b)  $S_1 \diamond d + S_2 \diamond d$

In the first case, a source gives permission to itself to permit itself to do or be something or to permit something to happen. Such redundancy does not seem to have any particular function (e.g., as opposed to reduplication of syllables or words, a redundancy which indicates plurality in some languages) and, therefore, its occurrence is not expected. The following sentences confirm this prediction:

\*Abbreviations and symbols are listed in the appendix.

- (1) \*The Department of Education permits itself to permit the publication of that play without prior censorship
- (2) \*The publication of that play may be permitted without prior censorship by the Department of Education (according to the Department of Education)
- Port. (3) \*o departamêto de educação se permite (a si mesmo) the department of education RP permits Prep. RP same a permitir a publikasão dakela pesa sê sêsurã Prep. permit the publication of-that play without censorship  
prêvia  
previous
- (4) \*a publikasão dakela pesa pode ser permitida pelo departamêto de educação (de akordo cõ o departamêto de educação) in accordance with  
may permitted by-the

In all of these examples, the sources of permission are redundantly the same, resulting in ungrammatical, semantically incongruous and logically impossible sentences. Therefore, the first possibility must be modified to  $S_1 \diamond d^*$   $S_1 \diamond d$ .

In both cases, (a) and (b), the second half of the combination fulfills the requirement of modal expressions of permission that the permission be granted to someone to do something. However, in the second combination, the sources of permission are different, and therefore the problem of redundancy is absent. Consequently, the stackability of permission modals is logically expected. The following examples illustrate the second combination:

- (5) you may permit her to leave early.  
source X permits you(y) to permit her to leave early
- (6) tell them she may be permitted to leave early.
- Port. (7) vose pode deixa la sair sedo.  
you may allow her to leave early.
- Korean (8) ki yeca eke ilcik ttëna tolok hëlak hayë to cot<sup>h</sup>a  
the woman DM early leave in order permit may
- Malay (9) kamu boleh benarkan dia pergi awal  
you may permit 3pp leave early

These sentences confirm that when source X permits source Y to do something, the sentence is logical, grammatical and semantically congruous, regardless of whether both sources of permission are explicitly mentioned in the sentence. Therefore, when source X is not explicitly mentioned in the sentence itself, some sort of identification on the part of the speaker

must occur. I observed that there is a tendency to identify the speaker as the source of the first modal when no explicit source is mentioned in the sentence. It should be added that this will happen only if the speaker is understood to be involved in the context. Otherwise, source X may be identified by further inquiry on the part of the hearer or addressee, or be understood to be someone (other than the speaker) related to the context.

However, when the expression "according to" occurs, there is a tendency to identify the person according to whom something is said as the source of the first modal, thus overriding the former tendency. Sentences (5) through (9) and the following examples were used to observe the identification of source X:

- (10) tell them that according to the dean you may permit her to enroll late
- (11) according to the dean, she may be permitted to enroll late
- Port. (12) diga a eles ke de akordo cõ o reitor vose  
tell to them that in accordance with the dean you  
pode deĩsa la se matrikular atrasada  
may permit her RP enroll late
- Korean (13) kitil eke nicke tinlok ha tolok ki yæca eke helak haya'  
them DM late enroll in order the woman DM permit  
cuae to tön̄ta ko mal haya la  
Ben. may Quo. tell Imp.

To verify if such identification is logically possible, these sentences will be submitted to a test of contradiction. The possible logical combinations are:

- (a)  $S_X \diamond d + S_Y \diamond d + S_X \sim \diamond d$
- (b)  $S_X \diamond d + S_Y \diamond d * S_X \sim \diamond d$
- (14) tell them that according to the dean she may be permitted to enroll late but that I (myself) do not permit it
- (15) tell them that according to the dean she may be permitted to enroll late but that he does not permit it
- Port. (16) diga a eles ke de akordo cõ o reitor  $\sphericalangle$   
say to them that in accordance with the dean specific  
pode deĩsa la se matrikular atrasada mas ke eu source of  
may permit her RP enroll late but that I 2nd modal  
não permito iso  
not permit this
- Port. (17) de akordo cõ o reitor  $\sphericalangle$  pode deĩsa  
in accordance with the dean specific source may permit  
of 2nd modal  
la se matrikular atrasada mas ke ele não permite iso  
her RP enroll late but that he not permit this

These sentences were not perceived to be contradictory. Speakers of both languages agree that the source of the first modal is not the dean. It seems, therefore, that the dean is the source of information rather than the actual source of authority of the first modal. In the affirmative declarative sentences, he is perceived to be going along with the source of authority while in the sentences above, he disagrees with one source of authority. In the particular context given above, native speakers suggest that the first source of authority consists of regulations with which the dean may or may not agree. The following sentences show the presumed identification of the speaker of the sentence as one of the sources of authority.

- (18) you may permit her to enroll late but I do not permit it
- Port. (19) vose pode deisa la se matrikular atrazada mas eu não  
 you may permit her RP enroll late but I not  
permito iso  
 permit this
- Korean(20) \*ki yeca eke nicke tinlok hatolok halak haecueto  
 the woman D M late enroll in order permit  
cohta kilona nanin kikəsil halak haci ani ha nta  
 may but I TP it OB permit not do PT decl.M
- Korean(21) ki yeca eke nicke tinlok hatolok halak haecueto cohta  
 the woman DM late enroll in order permit may  
 ko ha nta kilona nanin kikəsil halak haci ani ha nta  
 Quo.say Decl.Y but I topic it OB permit not do PT Decl.M

In these sentences, the speaker is the source of authority of the negated modal. When the speaker is involved in a context of permission and is not clearly identified as the first source of authority, no contradiction ensues in languages such as English and Portuguese, as illustrated by sentences (18) and (19). It follows that if the context makes the identification of the speaker as the first source of both affirmative and negative sentences unavoidable, then a contradiction of the following type occurs:

$$S_X \diamond_d + S_Y \diamond_d \quad * \quad S_X \sim \diamond_d$$

- (22) \*You may permit her to enroll late but I do not permit it
- Port. (23) \*vose pode deisa la se matrikular atrazada mas eu não  
 you may permit her RP enroll late but I not  
permito iso  
 permit this

In Korean, however, a contradiction ensues when no source of information is made explicit in the sentence as (20) illustrates. In other words, if such information is not explicit, the speaker is assumed to be either the actual source of authority or in agreement with the source. Thus, the stackability of permission modals in sentence (21)

is logically possible because the sentence makes it clear [by means of the phrase *ko ha nta* (roughly equivalent to 'they say')] that the source of information or authority of the affirmative sentence is not the speaker.

In summary, in affirmative declarative sentences, there is a tendency to identify the speaker as the source of information rather than the actual source of authority, when no other source of information is explicitly mentioned in the sentences. In some languages, this source of information is necessarily also in tacit agreement with the source of authority (e.g. Korean) while in other languages, the source of information may or may not be in agreement with the source of authority (e.g., Portuguese, English). In the latter type of languages, the context, and not the information contained in the sentence, determines the identification of the speaker as the source of authority. Thus, a contradiction ensues when the speaker is unavoidably identified through the context as the source of authority of the first modal of an affirmative sentence and simultaneously the authority of the negative sentence. Thus, the following logical combination applies to any language:

$$S_1 \diamond d + S_2 \diamond d * S_1 \sim \diamond d.$$

Ability modals differ from permission modals in that ability is a feature inherent in an object. Thus, an object may have or acquire an ability but not be granted an ability. The following are possible ways to stack ability and permission modalities:

- a)  $S_1 \diamond d + S_{1a} \diamond d$
- b)  $S_1 \diamond d + S_{2a} \diamond d$
- c)  $S_{1a} \diamond d + S_1 \diamond d$
- d)  $S_{1a} \diamond d + S_2 \diamond d$

The first combination is illustrated by the following sentences:

(24) \*he permits himself to be able to solve highly complex problems

(25) \*he may can solve highly complex problems

Port.(26) \*ele se deixa poder resolver problemas extremamente complexos  
 he RP allow be able solve problems highly complex

Without a specific context, these sentences are perceived to be ungrammatical or semantically incongruous, and logically impossible. Apparently, the source of authority of the first modal is granting permission for an ability which is not inherent in the object. This hypothesis is also confirmed in the following sentences which illustrate the second combination.

(27) \*you may be able to walk unaided in that scene

Port.(28) \*vose pode poder andar sẽ ajuda na ela sena  
 you may be able walk without help in-that scene



- Malay (29) \*kamu boleh boleh berjalan tanpa pertolongan dalam babak itu  
 you may be able walk (without aid in that scene)
- Malay (30) \*kamu boleh berupaya berjalan tanpa pertolongan dalam babak itu  
 you may be able walk
- (31) \*kamu dibenarkan boleh .... itu  
 permission modal be able
- (32) \*kamu dibenarkan berupaya ... itu  
 be able

However, it should be pointed out that the notion of ability may vary in different contexts. Thus, it seems possible that a certain type of ability which is not an inherent ability can be granted through permission. To clarify this point, let us consider the following context: an actor is portraying a man in his struggle to overcome a handicap, an inability to walk unaided. The director is asked to allow the actor to regain the ability to walk in a certain scene. The actor asks: May I be able to walk unaided in that scene? and the director answers with (33):

- (33) you may be able to walk unaided in that scene
- Korean (34) ki caŋmyən esə nin tounəpsɨ kəl ilsu isse to tōnta  
 the scene in topic unaided walk can may
- Port. (35) eu deišo vose poder ãdar sē azuda nakəla sena  
 I allow you be able walk without help in-that scene

As these sentences show, different grammatical and semantic requirements operating in different languages do not affect the logical combinatorial structure of modalities. Thus, the prediction that an object may have or acquire an ability (as in the case of the sentences above) is confirmed. This fact necessarily modifies the previous conclusion about the first combination and it must be expected to be logically possible as well.

- (36) I allow myself to be able to solve anything
- Port. (37) eu me permito a poder rezolver kwalker koisa  
ser capaz de  
 I me permit to be able resolve anything  
 myself be capable of

Ability modals express the idea that someone has the ability to do something. This necessarily means that the source of ability is the source of the action made possible by that ability: this action may be the granting of permission.

- (38) he is able to permit her to leave now (that he has overcome his anger at her having an abortion)
- Port. (39) ele agora pode deiša- la ir ãbora  
 he now be able allow her go away

Korean (40)  $k\ddot{i}$   $y\grave{a}ca$   $eke$   $cikim$   $tt\grave{e}na$   $tolok$   $h\grave{e}lak$   $hay\grave{e}$   $culsu$   $issta$   
 the woman DM now leave permit can exist

Malay (41)  $dia$   $boleh$   $benarkan$   $dia$   $pergi$   
 3p be able permission 3p leave  
 pro. pro.

(42) \*he is able to be permitted by them to leave early

Therefore, the combination  $S_{1a} \diamond d + S_1 \diamond d$  is confirmed but

$S_{1a} \diamond d + S_2 \diamond d$  must be modified:  $S_{1a} \diamond d * S_2 \diamond d$ .

Let us look at the stackability of ability modals. We now know that the source of ability has to be the same source as "what one is able to do." In addition, to say that one is able to be able seems redundant. The following sentences confirm this observation, suggesting that the following prediction is applicable to any language:

$S_{1a} \diamond d * S_{1a} \diamond d$ .

(43) \*he can be able to walk unaided in that scene

(44) \*he is able to be able to walk unaided in that scene

Port. (45)  $ele$   $pode$   $\tilde{a}dar$   $s\tilde{e}m$   $\check{a}zuda$   $nak\epsilon la$   $sena$   
 can walk without help in that scene

Korean (46) \*\* $toum$   $\epsilon psi$   $k\grave{e}lil$   $su$   $iss$   $\#l$   $su$   $issta$   
 unaided walk be able be able

(47)  $toum$   $\epsilon psi$   $k\grave{e}lil$   $su$   $iss$   $ta$   
 unaided walk be able

Malay (48) \* $dia$   $boleh$   $berupaya$   $berjalan$   $tanpa$   $pertolongan$   $dalam$   
 3pp may ability modal walk  
 babak itu

Malay (49)  $dia$   $boleh$   $berjalan$   $tanpa$   $pertolongan$   $dalam$   $babak$   $itu$   
 3pp may walk

Port. (50) \*\* $ele$   $pode$   $poder$   $\tilde{a}dar$   $s\tilde{e}$   $\check{a}zuda$   $nak\epsilon la$   $sena$   
 is able to  
 be able

I also observed that the sentences in which two modals with the same form were stacked were considered highly unacceptable. This unacceptability may be related to syntactical rules in many if not all languages which prevent the sequential repetition of words of the same grammatical class. As an example, there is a study by J. R. Ross (1972), entitled "Doubling", which shows the ungrammaticality of the sequential repetition of (the same) present participles.

Similar to permission, obligation requires a source to impose a necessity to do something on someone. Therefore, it is expected that one

is obliged to permit something or that one is obliged to be able to do something. The following sentences confirm that obligation and permission can be stacked in this order:

$S_{10} \diamond d + S_2 \diamond d$

- (51) he must permit her to go
- (52) he must be able to let her go
- Port. (53) ele tẽ ke permitted ke ela va  
he has to permit that she go
- Port. (54) ?ele tẽ ke poder ãdar  
he has to be able walk
- Korean (55) ki yæca eke ka tolok hælak ha yæcuæya hanta  
the woman DM to permit must
- Korean (56) kalil su issæya hanta  
walk be able must
- Malay (57) dia mesti benarkan dia pergi  
3pp must permit 3pp go
- Malay (58) ?dia mesti boleh berjalan  
3pp must be able walk

Sentences (54) and (58) indicate that some speakers felt uncomfortable with the stackability of obligation and ability modalities. I believe that this problem may arise from the fact that ability is inherent in predicates such as walk. It should be noticed that these sentences were not considered ungrammatical. Data from other languages should shed some light on this problem.

On the other hand, it is expected that one may impose an obligation on oneself to do something, be it granting permission or being able.

- (59) he obliges himself to permit anyone to apply for the job,  
even though he has an aversion to certain types of people
- (60) he obliges himself to be able to run 10 miles a day regard-  
less of how he feels
- Port. (61) ele se obriga a permitted ke kwalkan pessoa pesa  
RP oblige to permit that any person ask  
o ẽprego  
the job
- (62) ele se obriga a koxer 10 mi~~k~~as por dia  
run prep. day

Therefore, logically  $S_{10} \diamond d + S_1 \diamond d$  and  $S_{10} \diamond d + S_{1a} \diamond d$  are possible, although the second combination cannot be expected to surface in all languages, given that speakers may perceive ability to be inherent in some predicates.

Some of the observations made earlier apply to the question of whether permission or ability modals can be stacked with obligation, in this order. Permission may be granted to someone to impose an obligation, implying different sources for both modals, and one may be able to impose obligations, implying the same source for both modals. Therefore, the following combinations are expected:

- a)  $S_1 \diamond d + S_{2o} \square d$   
 b)  $S_{1a} \diamond d + S_{1o} \square d$   
 c)  $S_1 \diamond d * S_{1o} \square d$   
 d)  $S_{1a} \diamond d * S_{2o} \square d$

(63) he may oblige her not to leave town

Port. (64) ele pode obriga-la a não sair da cidade  
 may oblige her prep. not leave of the town

Korean (65) ki-nin ki yæca ka c<sup>h</sup>ult<sup>h</sup>a ha ci ani ha tolok conyon ha  
 he topic the woman leave town not to oblige  
yæto tōnta  
 may

Malay (66) dia boleh paksa dia supaya tidak tinggalkan pekan ni  
 may force

(67) \*he permits himself to oblige her not to leave town

Port. (68) ele se permite a si mesmo a obriga-la a não  
 permit himself prep. oblige her  
 sair da cidade

These sentences confirm the accuracy of the first and third combinations.

(69) he can oblige her to go = he is able to oblige her to go

Port. (70) ele pode obriga-la a ir  
 prep. go

Korean (71) ki nin ki yæca eke ka tolok conyon hal su issta  
 he topic the woman DM to oblige be able

Malay (72) dia boleh paksa dia pergi  
 be able force go

(73) \*he is able to be obliged by her to undergo that operation

Port. (74) \*ele pode ser obrigado por ela a fazer akela operação  
 be obliged by her to undergo that operation

Korean (75)\* ki nin ttæna ci ani hamyæn ani tōlsu issta  
 he topic leave according to exist

These sentences confirm the accuracy of the second and fourth combinations.

There are two possible ways of stacking obligation modals:

a)  $S_{1o} \square d + S_{1o} \square d$

b)  $S_{1o} \square d + S_{2o} \square d$

The first combination states that a source imposes an obligation on itself to become the source of the next obligation modal. This results in a redundant imposition and, logically, the first combination is expected to be  $S_{1o} \square d * S_{1o} \square d$ . The following examples confirm the prediction.

(76) \*she obliges herself to oblige her students to come on time

Port. (77) \*ela se obriga a obrigar os alunos dela a chegarẽ  
refl. oblige to the students of her to come

na ora  
on time

However, the imposition of an obligation constitutes a necessity in itself and, even if different sources were involved, one would be obliged to oblige.

(78) \*he is obliged to oblige his students to come on time = they oblige him to oblige his students to come on time

Port. (79) \*ele e obrigado a obrigar os alunos dele a chegarẽ  
is obliged to oblige

na ora  
on time

Although grammatical, these sentences are also perceived as redundant and the second combination must be modified to:

$S_{1o} \square d * S_{2o} \square d$

The difference between sentences (80), (83) and (81), (82) lies in the transitivity of the obligation modality. However, some ambiguity should be expected when non-specific modals such as must are used, because obligation, in addition to constituting a necessity in itself, also implies a complement which constitutes a necessity as well.

(80) he must be responsible for his own actions

(81) I oblige him to be responsible for his own actions

(82) he is obliged to be responsible for his own actions

(83) he must be obliged to be responsible for his own actions

If it becomes necessary to differentiate between plain necessity and imposed necessity (obligation), a specific modal of obligation is probably used. Given that such ambiguity occurs, one should expect that NonSpec. Modal  $\rightarrow \sim$  Modal [+obligation], that is, when a non-specific modal of necessity is negated, the meaning of obligation is automatically assigned to it to prevent contradiction.

- (84) he must close all the windows at night but it is (really) not necessary = he is obliged to close all the windows at night but it is not necessary
- Port. (85) ele tẽ ke fesar todas as žanelas a noite mas iso  
has to close all the windows at night but it  
nãõ e necessario  
not is necessary
- \*(86) he must close the windows at night but it is not necessary = it is necessary that he close the windows but it is not necessary
- Port. (87) \*e presizo ke ele fese todas as žanelas mas iso nãõ  
is needed that he close all the windows but it not  
e presizo  
is needed

These Portuguese examples suggest that plain necessity may be differentiated from obligation by the use of the different expressions presizar and ter ke. However, ter ke conveys the meaning of plain necessity, unambiguously, in other contexts.

Given that obligation differs from plain necessity in that only the former requires that the necessity be imposed by an animate source, and that plain necessity is the existential fact itself (it is necessary = there is a necessity), the only way these modalities can be stacked is the following:

$$\square d + S \left\{ \begin{array}{l} o \square d \\ a \diamond d \\ \diamond d \end{array} \right.$$

This also implies that the following combination is expected:

$$S \left\{ \begin{array}{l} o \square d \\ a \diamond d \\ \diamond d \end{array} \right\} * \square d$$

- (88) \*he may/ permits that he must be responsible  
can/is able to it is necessary that he be  
must/is obliged to responsible
- (89) he must be obliged to eat more = it is necessary that he be obliged (someone talking about a person who has anorexia nervosa)
- Port. (90) ele tẽ ke ser obrigado a comer mais = e presizo ke  
has to be obliged to eat more is needed that  
ele koma mais  
he eat more

Malay (91) dia mesti dipaksa supaya makan lebih  
 he must be forced to eat more

These sentences confirm the accuracy of the predictions above. However, it should be noticed that some problems remain since in Korean the equivalent sentence is ungrammatical:

Korean (92) \*mekəya haci ani hamyən ani tōnta

#### The Stackability of Epistemic and Deontic Modals

Epistemic modals are based on someone's knowledge. The possibility  $\diamond_e$ , probability  $\text{p} \diamond_e$  or necessity  $\square_e$  of something happening is predicted on the basis of what one knows about a set of circumstances. In addition, these modalities express an existential fact. Therefore, the same prediction made earlier about deontic modalities of necessity can be made here. That is, epistemic modals can only be stacked with deontic modals when they precede the latter:

Base  $S_{1,2} M_e + S_{1,2} M_d$  and  $S_{1,2} M_d * B_{1,2} M_e$ .

(93) he may permit her to go = it is possible that he will permit her to go

Port. (94) ele deve permitir ke ela va

Korean (95) ki yəca eke ka tolok həlak hayə cul ləncito molinta  
 the woman DM to permit may

Malay (96) dia boleh benarkan dia pergi  
 he may permit her go

(97) one may be able to solve these problems

Port. (98) algẽ deve poder rezolver eses problemas  
 someone may be able solve these problems

Korean (99) ilən munce nin pul su issil ci to molinta  
 such problem topic solve be able may

The question of stackability of different epistemic modals is not clear yet, and I need to look more into it before making plausible suggestions. To mention just one problem, let us examine the following sentences.

(100) it is possible that John may be sick

Port. (101) ε posiveu ke John esteza doente  
 is possible that be sick  
 subjunctive

Korean (102) ??John i aphil ləncito molil kanin sən i issta  
 sick may possibility exist

Malay (103) ? mungkin barangkali dia tidur  
 possibly probably he sleep

- (104) it may be possible that John is sick
- Port. (105) pode ser ke john este<sup>v</sup>za doente  
 may be that john be sick  
 subjunctive
- Korean (106) ?? Johni aphin kəsi kanin halcito molinta  
 sick complem. possibility may
- Malay (107) ?Barangkal mungkin dia tidor

In English, both sentences (100) and (104) are acceptable. In Portuguese, the subjunctive expresses one modality; if another modal were used, the sentence would be ungrammatical. In Korean and in Malay, a problem of acceptability and grammaticality occurs.

Difficulties of this type abound when one deals with epistemic modals and I would rather refrain now from making predictions which will be based on possibly unsound premises.

#### The Stackability of the Modals Themselves

This paper has dealt primarily with the stackability of modalities because this is a necessary step in understanding the semantic properties of modals themselves. However, some additional observations can be made.

1 - Epistemic modals can be stacked with some deontic modals if the latter do not precede them. It has been reported, and I have recently been told first-hand by a Louisiana resident, that in a Louisiana dialect, auxiliary modals can be stacked, as for example, "might could".<sup>2</sup> It is probable that "could" is deontic (cf. Portuguese in which epistemic dever and deontic poder can be stacked).

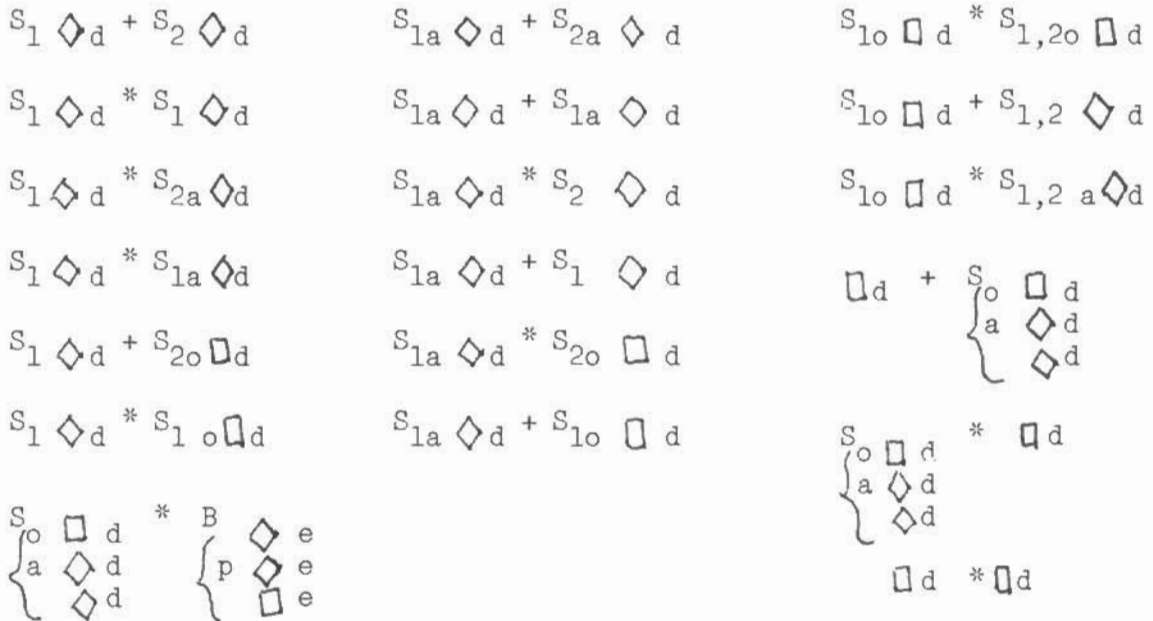
2 - Auxiliary modals can be stacked with periphrastic or single form modals provided that the latter follow the former. However, in English, the opposite can occur, if the auxiliary is part of a sentential complement as in sentence (100). In either case, stackability depends on the properties of modalities and their source of permission (e.g. same or different sources, etc. . .).

3 - Grammatical constraints prevent some modal expressions from being used in some constructions. In Portuguese, deisar requires an object, while permitir requires a sentential complement and must be preceded by the sentential conjunct ke. Thus, it appears (not surprisingly) that language-specific constraints, at least partially, rule the stackability of modal expressions.

#### Summary and Conclusion

The following is a summary of the possible ways of stacking modalities, confirmed by the four different languages dealt with in this paper and most likely applicable to any other natural language in which these modalities are grammatically realized:





Another generalization found to be true of all four languages is the following: when the source(s) or base of a modal is not explicitly mentioned in the sentence, the source or base of the first modal is identified with the speaker, or, the speaker is thought to agree with an unidentified source (which may be identified by the context). This identification usually occurs with single form deontic modal expressions and with either periphrastic or single form epistemic modals.

(108) according to Rattle (S), he may permit her to go  
 $\square_e$

(109) according to Rattle (B), he may permit her to go  
 $\diamond_e$

It should be noticed that with verbs such as say, the source may be identified with the subject of these verbs, but when according to occurs, it is the person according to whom something is said that is identified with the source.

(110) Baldie says that he may permit her to go

(111) Baldie says that according to Rattle, you may permit her to go

When periphrastic forms are used, the speaker may be assumed to agree with the source, especially if these forms are in the passive voice as in the case of Portuguese and English.

(112) he is obliged to permit her to go

Port. (113) ele é obrigado a deixá-la ir  
 he is obliged to let her go

However, this need not always be the case, as when the passive is used, for example.

- (114) he is permitted to oblige her to go, if this is really the only way to get her to assume her responsibilities

In the sentence above, the speaker is identified as the source.

Finally, two other principles were verified. One principle states that when modals of different meanings are stacked, they have to be of different forms. If they have the same form, a rule applies, deleting one of the forms. The other principle states that modals with the same meaning can be stacked, provided they have different forms. It should be noted, however, that these principles are bound by other constraints and are applicable only when the modalities in question can be stacked.

As was mentioned in the introduction, this is preliminary work and further investigation is needed into the stackability of other modalities and of modal expressions.

#### Footnotes

1 The distribution of languages and native speakers consulted for this paper is the following:

Malay - 2  
Korean - 2  
Portuguese - 5  
English - 5

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2 In addition to this personal communication, there are two studies on this linguistic phenomenon which is characteristic of more than one dialect of English. However, this subject lies outside the scope of this paper as it involves epistemic modals. References to these papers can be found in the references.

References

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Abbreviations and Symbols

- ◇<sub>d</sub> - permission modality
- a◇<sub>d</sub> - ability modality
- o□<sub>d</sub> - obligation modality
- <sub>d</sub> - necessity
- M<sub>d</sub> - deontic modality
- M<sub>e</sub> - epistemic modality
- ~ - negation
- S - source
- Base- base of someone's knowledge (epistemic)
- \* - logically impossible (in combinations)
- + - logically possible (in combinations)
- \* - ungrammatical and/or semantically incongruous and/or logically impossible (before sentences)
- ? - indicates hesitancy or doubt of native speaker's judgement
- Ben- benefactive
- DM - dative marker
- Decl. M - declarative sentence marker
- Imp- imperative
- OB - object
- Prep.-preposition
- pro.- pronoun
- #pp- person pronoun
- PT - present tense
- Quo.- quotative
- RP - reflexive pronoun