Possibility and Necessity and the Scope of Negation in Early Middle Chinese[1]

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Abstract

This paper provides a classification of modal verbs of possibility and necessity in Late Archaic and Early Middle Chinese based on an analysis of their scopal features with respect to negation. It shows that circumstantial readings and deontic readings are interpreted in two different syntactic positions which can be determined by the scope of negation following the cartographic approach proposed in Tsai (2008, 2015) and the proposal of Cormack and Smith (2002) of a Polarity Head, which constitutes a syntactic divide of the domain of necessity modals from the domain of circumstantial modals. Our analysis of the scope of negation demonstrates that the deontic interpretation of possibility modals requires their upward movement from the lexical to the functional domain as part of the grammaticalization process from pre-modal lexical verbs to modal auxiliaries of different functions in Modern Mandarin. In Early Middle Chinese, negated modal verbs of possibility start to replace the synthetic modal negators of Archaic Chinese as part of the general process of analyticization of Chinese. We also show that the only true necessity modals in Late Archaic Chinese belong to the category of circumstantial modals due to their scopal features when they are negated.

Keywords

Late Archaic, Middle Chinese, Modal verbs, Negation, Scope, Grammaticalization

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1. Introduction: The proposal

Structural changes in Early Middle Chinese (EMC) (1st BCE–2nd c. CE) and Middle Chinese (2nd – 6th c. CE)[1] affected the modal system of Archaic Chinese particularly regarding the expression of deontic modality. In Late Archaic Chinese (LAC, 5th–2nd c. BCE), modal values were predominantly expressed by modal verbs (premodals) expressing possibility; possibility modals belong to what Elisabeth Leiss (2008: 16) calls 'first modals' (Alain Peyraube 1999, Liu Li 2000, Li Ming 2001, Leiss 2008). Deontic modality in LAC was usually expressed by the root possibility verbs *kě* 可 'possible, can' and *dé* 得 'can, manage to', and by the modal verb *bì* 必 'necessary, must'. The deontic interpretation of the root possibility modals required syntactically marked contexts involving polarity, though. These contexts were provided by the combination with a negator a) NEG+KE/DE; b) KE/DE+NEG; c) NEG+KE/DE+NEG, or by the reverse polarity of rhetorical questions (Ljiljiana Progovac 1994, Han Chung-Hye 998). But even in syntactically marked contexts, root possibility markers were polysemous and could receive either a deontic necessity or a possibility reading. This polysemy – among other factors – may have triggered the emergence of the new and unambiguous deontic markers *dāng* 當 'should', and *yīng* 應 'should, ought', and *xū* 須 'need' at the end of the LAC and the beginning of the EMC period.

This paper proposes some evidence for different syntactic positions in which the deontic and the dynamic/circumstantial modal readings of possibility modals are interpreted. The analysis profits from Dylan Tsai's (2015) cartographic analysis of modals in Modern Mandarin, in which the following syntactic distinctions between the different modal readings are proposed: epistemic modality is hosted in the CP layer, deontic modality in the TP, and circumstantial modality in the lexical layer. Since word order constraints are stricter in LAC and

in MC than they are in Modern Mandarin, the syntactic positions in which the respective modals are interpreted are difficult to test directly. In order to tease out the syntax of the LAC and (E)MC modals within the hierarchy of modal projections, we resort to the semantic scope of negation in order to argue for different syntactic positions in which the deontic and possibility readings (dynamic modality) of originally dynamic modals are interpreted. This approach is inspired by a proposal by Annabel Cormack and Neill Smith (2002), who argue that a functional head Pol(arity) (POS/NEG) in TP divides modals into two groups according to the semantic scope of negation:

1) Modal$_1$ in the pre-Pol (POS/NEG) position, expressing deontic modality (necessity) in the inflectional TP layer;

2) Modal$_2$ in the post-Pol position, expressing dynamic/circumstantial) modality (possibility); following Tsai's cartographic approach (e.g, Tsai 2015, based on Luigi Rizzi 1997, Guglielmo Cinque 1999) these appear in the lexical layer.

   According to the scope of negation, three different categories of modal verbs which allow or require deontic readings can be distinguished in LAC and EMC:

a) The modal verbs of possibility *kě* 可 'possible, can' and *dé* 得 'obtain, manage to, can', expressing a) root possibility, and b) deontic modality. The scope of negation allows a syntactic distinction between their functions as Modal$_1$ or Modal$_2$ respectively.

b) The deontic modals *dāng* 當 'correspond, should', and *yīng* 應 'correspond, ought, should', expressing deontic modality / Modal$_1$; they always scope over negation.

c) The modal verbs *bì* 必 'necessary, must' and *xū* 須 'wait for, must need', which express necessity modality, but seem to belong to the category of Modal$_2$, because as verbs they are in the scope of negation.
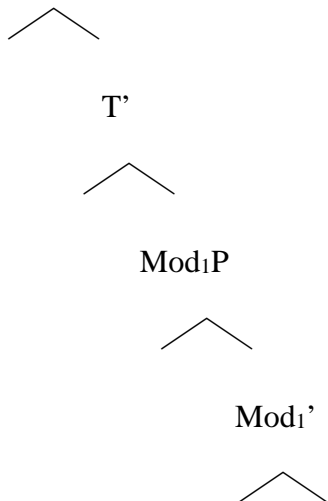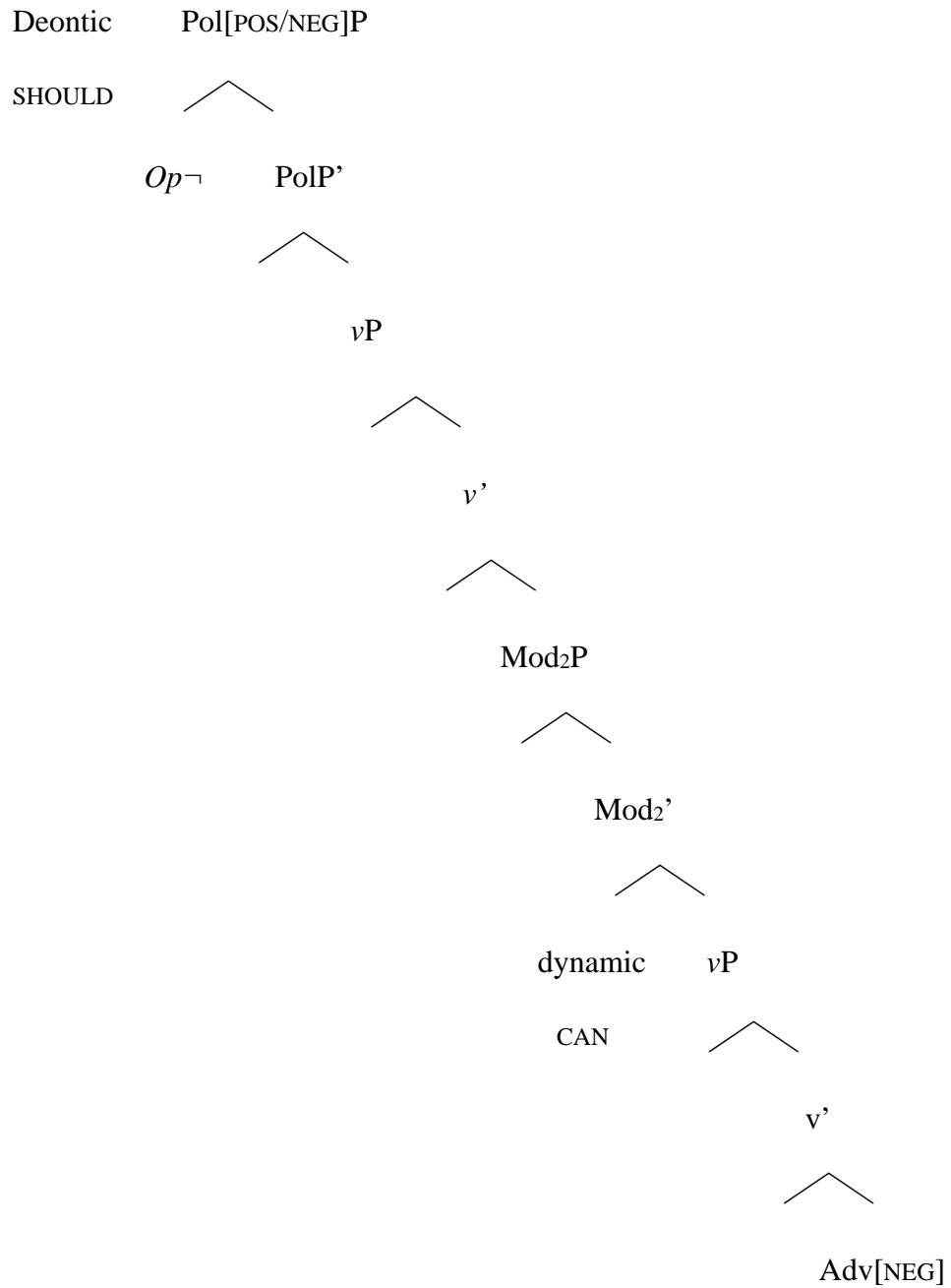
Table 1: Modals in LAC and EMC

	Modal₁: deontic necessity	Circumstantial modals: Modal₂	Modal₂: necessity
LAC	NEG+KE/KEYI(+NEG) *may/must (not)* NEG+DE(+NEG) *may/must (not)*	(NEG+)KE/KEYI *can(not)*; (NEG+)DE *can(not)*; (NEG+) NENG *(not) able*	BI *necessary*
(E)MC	NEG+KE/KEYI/ NEG+DE(+NEG); (NEG+)DANG (NEG+)YING(+NEG)	(NEG+)KE/KEYI; (NEG+)DE; (NEG+)NENG	BI; XU *need*

Cormack and Smith (2002) propose the order of heads shown in (1a); (1b) provides the syntactic structure of their proposal:

(1) a. C T (Modal₁) Pol(POS/NEG)(Modal₂) (Adv[NEG] …

    b. TP

            T'

                Mod₁P

                    Mod₁'

```
Deontic        Pol[POS/NEG]P

SHOULD            /\
              Op¬      PolP'
                        /\
                          vP
                          /\
                          v'
                          /\
                       Mod₂P
                         /\
                       Mod₂'
                         /\
                  dynamic    vP
                    CAN       /\
                              v'
                              /\
                           Adv[NEG]
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Example (2) represents the different readings of the modal verb *kě* 可 in different syntactic contexts. *Kě* in its basic meaning 'possible/can' expresses root possibility (Barbara Meister-ernst 2008a, b). In (2a) only the root possibility reading is available. In (2b), both the root possibility and the permission (deontic) reading are available in the construction NEG+KE. In (2c), a deontic reading emerges in a rhetorical question with the order KE+NEG. In (2d), the

deontic reading is the obligatory reading of the modal in the construction NEG+KE+NEG. Chinese is not a Negative Concord language; therefore, the two negators cancel each other out in the double negator construction NEG+KE+NEG in (2d). This construction always expresses an obligation according to norms and rules; the negative variant of 'must be mutually connected' would be 'must not/may not be mutually connected' NEG+KE, a prohibition. The example in (2d) provides evidence for the existence of a POL head which marks a clear divide between the deontic necessity reading of KE with two negators, and the root possibility reading (Meisterernst 2008) in (2a) and (2b); in (2b) both the possibility and the deontic reading are available. According to Cormack and Smith (2002) permissible readings as in paraphrase b) of (2b) allow two different paraphrases, this argues for their proposal of an Adv[NEG]. This is shown in example (2e), Cormack's and Smith's example (9). An interpretation of 'can[not' in (2b) is not possible with the verb *kě* in LAC. Thus, in LAC MOD2 does not have scope over Adv[NEG] as proposed in Cormack and Smith in order to account for the scope variation in their example (9). However, 'CAN[NOT' can be directly expressed by KE+NEG VP as in (2c). This structure mainly appears in rhetorical questions.[2]

(2) a. 「宋師不整，可敗也。(*Zuozhuan, Zhuang* 10.2.1, LAC)

　　　Sòng shī　bù　zhěng　　　kě　bài　yě

　　　Song army NEG in.good.order　KE　destroySFP

　　　'The Song army is not in good order, it can be destroyed.'

Paraphrase: 'Because the Song army is not in good order, it is possible that it is being destroyed.'

This cannot be paraphrased by: 'NECESSARY to be destroyed'.

　　b. 臣聞敗軍之將，不可以言勇，亡國之大夫，不可以圖存. (*Shǐjì*: 92;2617, EMC)

　　　chén　wén bài　jūn　zhī　jiàng　bù　kě　yǐ yán　yǒng

subject hear defeat army GEN general NEG can YI speak bravery

wáng guó zhī dàifū bù kě yǐ tú cún

perish land GEN dignitary NEG can YI plan exist

'I have heard that the general of a defeated army may not speak about bravery and the

dignitaries of a perished country may not devise plans for maintenance.'

Paraphrases:

a) 'it is not possible that the general of a defeated army speaks about … = a general of a de-

feated army is not able to speak about … >> NOT [POSSIBLE / CAN

b) It is not permitted that the general of a defeated army speaks about … = it is advisable that

a general of a defeated army does not speak about …' >> NECESSARY[NOT

   c. 勢之於人也，可不慎與？ (EMC: *Shǐjì*:40;1737, 100 BCE)

   *shì zhī yú rén yě **kě bù** shèn yú*

   influence GEN at man SFP can NEG careful SFP

   'And in using one's power with regard to human beings, must one not be careful / one

   must (it is necessary to) be careful!?'

Paraphrase: is it possible not to be careful? ⇒ it is not possible not to be careful ⇒ it is nec-

essary to be careful: reverse polarity. *It is necessary that one is not careful.[3]

   d. 四鄰諸侯之相與，不可以不相接也，然而不必相親也， (*Xunzi* 12.10.6, LAC)

   *Sì lín zhūhóu zhī xiāng yǔ **bù kěyǐ bù***

   Four neighbour feudal.lord GEN mutual be.close NEG KEYI NEG

   xiāng jiē yě ránér bù bì xiāng qīn yě

   mutual connect SFP but NEG BI mutual close SFP

   'Regarding the relation between [the ruler and] the feudal lords from the four neigh-

   bouring directions, they must [cannot not] be mutually connected, but they do not have

   to be close to each other.'

Paraphrase: it is NOT possible that they are NOT mutually connected = it is NECESSARY

(Pol[POS]) that they are mutually connected.

NOT POSSIBLE NOT = NECESSARY[THAT (NECESSARY[POS])

   e.   Edwin can not climb trees.

        It is not permitted that Edwin climb trees.   NOT[CAN

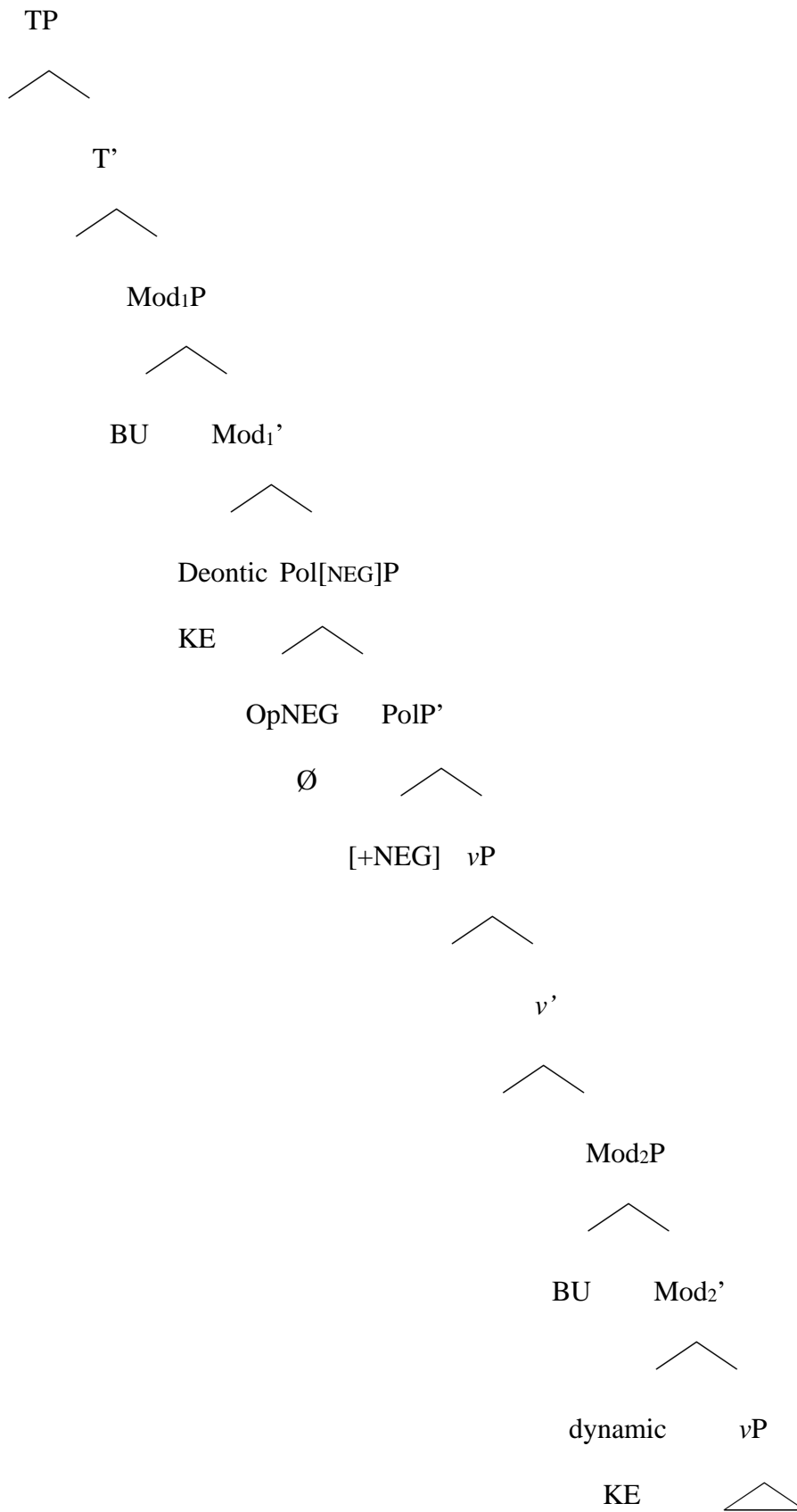   Edwin is permitted not to climb trees.   CAN[NOT'" (cf. Cormack and Smith

        2002:136, example (9))

Depending on the position of the modal preceding or following the Polarity head, the deontic

or dynamic readings emerge. According to the scope facts of (2b), we assume that the posi-

tion of the lower negator is different in Chinese from the position proposed in Cormack and

Smith for English. It appears as a specifier in a position preceding Mod_2. The position of a

negative marker is fixed with regard to *v* and to the modal auxiliary verb (see also section 2).

This can be seen in (3).

(3) a. C T (Modal₁) Pol(POS/NEG) (Modal₂)

b.
$$\text{TP}$$

T'

Mod₁P

BU   Mod₁'

Deontic Pol[NEG]P

KE

OpNEG   PolP'

Ø

[+NEG]   *v*P

v'

Mod₂P

BU   Mod₂'

dynamic   *v*P

KE

Mod$_1$ corresponds to deontic modality (necessity), Mod$_2$ corresponds to circumstantial or dynamic modality (possibility). Dynamic modality is generated in the lexical layer (see e.g, Tsai 2015). In order to derive the dynamic reading 'CAN[NOT' the negator has to precede the modal: 'CAN[NOT' can only be expressed by NOT[POSSIBLE. A similar order has been proposed in Jonny Butler 2003: 984f):

Subject >>> root necessity >>> negation; this corresponds to deontic necessity

The children mustn't do that here

Subject >>> negation >>> root possibility

The children can't do that here…

According to Butler (idem) "The array necessity > negation > possibility appears once immediately above vP, where the modality is interpreted as root, and once immediately above TP, where the modality is interpreted as epistemic."

In the following discussion we will argue that the grammaticalization from a premodal verb expressing possibility in the lexical domain to a deontic modal auxiliary located in the functional domain requires the upward movement of the lexical category Mod$_2$ to the functional category Mod$_1$ following the syntax of grammaticalization proposed in Ian Roberts and Anna Roussou (2003). The paper is structured as follows: Section 2 will argue for the overt realization of the functional category Mod$_1$P. This category is realized by synthetic modal negators in Archaic Chinese. These are merged directly in the CP/TP domain, and are thus the less marked option (Roberts and Roussou 1999, 2002: 26). During the grammaticalization process of MOD$_{poss}$, synthetic modal negators are gradually replaced by analytic modal negation NEG+MOD as part of the general process of analyticization in Chinese. Additionally, the status of the negator *bù* will be discussed briefly. Section 3 is devoted to the analysis of the modal verbs listed in table 1, and their scopal features with regard to negation. Arguments for the

introduction of a polarity head in order to account for the scope of negation will be provided in this section. Section 4 concludes the paper.

2. Prohibition and negation in Late Archaic Chinese

2.1 Synthetic modal negation in Chinese

In Archaic Chinese, i.e. in Early (10[th] – 6[th] c. BCE) and in Late Archaic Chinese, negative deontic modality (prohibition) is expressed by the synthetic modal negators *wú* 無 / 毋 / 无 and *wù* 勿 'don't!'; i.e., Chinese has negative imperatives, typical for Double Negation languages (Hedde Zeijlstra 2004: 140 (for German)). In the Buddhist literature of Early Middle and Middle Chinese, synthetic modal negation still exists. It is expressed by the ancient negator *wù* 勿, and by the negator *mò* 莫, which developed from a negative quantifier into a modal negator in EMC. Additionally, prohibition is increasingly expressed by analytic modal negation, i.e. by the combinations of NEG+MODposs and NEG+DANG/ YING, the negated forms of the newly emerged deontic modal verbs. In these combinations both the EMC modal negators or the modally neutral marker *bù* 不 are permitted.

Example (4a) shows synthetic modal negation in the first and analytic modal negation with a modal negator in the second clause; (4b) shows analytic modal negation with the modally neutral negator *bù* 不.

(4) a. 『汝等勿怖，莫得退還。 (*Taishō* 9, 262,_p. 26a, MC)

　　 *Rú děng **wù**　　 **pù**　 **mò**　 **dé**　 tuìhuán*

　　 YouPL　　 NEGmod afraidNEGmod DE　 revert

　　 'Don't be afraid, don't revert!'

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Paraphrase: it is **NECESSARY** NOT to be afraid, … → NECESSARY[NOT = clear obligation, the theoretical possibility still exists

    b. 淨人益食**不得**相喚。但以手指麾。 (*Taishō* 51, 2085, 857b, MC)

    *Jìngrén yì shí **bù dé** xiāng huàn dàn yǐ shǒu zhǐ huī*

    Server add food NEG DE mutual call.out onlywithhand show wave

    'If the servers are supposed to add food, one **must not call** them, only wave with the

    hands.'

Paraphrase: it is **NECESSARY** NOT to call (out loud) to them; → NECESSARY[NOT = clear obligation, the theoretical possibility to call still exists.

Table 2: The modal negative markers *wú* and *wù*

	Pinyin	Old Chinese[4]	Meaning	Proposed fusion
毋	*wú*	*mo	don't	
勿	*wù*	*mut	'don't', 'not … it'	V_{tr}; (勿 *mu + 之 *tə) (A.C. Graham 1952)

Similar to English modals (Roberts and Roussou 2002: 27), which can have contracted forms, the synthetic negative markers of Archaic Chinese most likely have to be analyzed as a contraction of a prefixed negative element *m-* and a modal (verbal) head. However, the NEG-feature of the modal head does not constitute its own NEG projection, but is parasitic on the modal functional head (this possibility has been proposed in Liliane Haegeman 1995: 127). Arguments for this analysis come from other allegedly contracted forms in AC (e.g., copulas)

and from the fact that in Modern Sinitic varieties, negated modal auxiliaries tend to be con-

tracted with a negation marking prefix, e.g., *bú yòng* 不用 > *béng* 甭 James Huang 1988,

Thomas Ernst 1995).

2.2 The syntactic position of the deontic negative markers

  In this section the syntactic position of the two synthetic modal negators 1) *wú* 毋/無, 2) *wù*

勿 will be discussed briefly. According to Redouane Djamouri (1991) the latter appears par-

ticularly in the negation of transitive verbs, whereas the former negates intransitive and sta-

tive verbs in the Oracle Bone and Bronze Inscriptions. This proposal has been challenged by

numerous scholars.[5] In our analysis, we follow Djamouri's proposal and not the fusion pro-

posal e.g, in Graham (1952). Additionally, Djamouri (1991) proposes that *wú* marks epis-

temic and *wù* deontic modality in the early documents. This distinction is difficult to maintain

in the transmitted LAC literature, but it cannot be excluded that *wú* 毋/無 and *wù* 勿 appeared

in different syntactic positions originally. The semantic function of the two negators is always

NECESSARY NOT, i.e. the inherent necessity operator scopes over negation; (5) is a typical ex-

ample of modal *wù* in LAC.

(5) 禁舊客**勿**出於宮。 (*Zuozhuan Zhao* 18, LAC)

  *Jìn   jiù kè   **wù**   chū yú   gōng*

  Prohibit old guest NEGmod leave PREP palace

  'he (forbade) **ordered** older visitors **not to** leave the palace.'

  Djamouri (2004) claims that *wù* 勿 as a deontic modal marker can have focalizing functions

in the Shang bone inscriptions. He provides the example in (6) as evidence for this proposal;

according to his translation, the subject is focalized. Meisterernst (2019b), on the other hand, proposes that *wù* originates from a verbal modal head with a modal negative prefix *m-* in specifier position. The modal head and the *m-* negative prefix are in an agreement relation; the prefix *m-* specifies the modal head as [+NEG]. The analysis in (6b) reflects this proposal. According to this analysis, a negative modal verb takes a CP as its complement. The analysis in (6b) results in the translation 'It must not be the case that the king personally inspects and fights', different from the translation proposed in Djamouri (2004). This analysis is supported by an emendation of the example cited in Djamouri (2004); in this emendation the modal negator *wù* 'must not' is actually followed by the copula/focus marker *wéi* 隹.[6] The employment of *wù* preceding a copula would clearly suggest that *wù* negates the entire proposition following it and not merely the *v*P. In this analysis, the modal negator is still transparent as a verbal head. More evidence for this function comes from the combination of *wù* with the existential verb *yǒu* 有 'have, there is' in example (6c). Similar to the combination with the copula *wéi*, with the existential verb *yǒu*, *wù* cannot convey a direct obligation on an agent; the latter function has been proposed as the defining feature of the modal negator *wù* in Djamouri (2004).

(6) a. 勿王自望戎 (*Heji* 7, 218, OBI, from Djamouri 2004: 161)
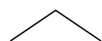
   Wù wáng zì   wàng   róng

   WU king personally inspect fight

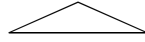   'it must not be the king who personally inspects and fights.'

   b.   VP/MODP

         m-   V/MOD'

-ut[7]   CP

The king personally inspects and fights

c. 子產與宋人為成，曰，「勿有是」。 (*Zuozhuan, Ai* 12, LAC)

zǐ Zhǎn yǔ Sòng rén   wéi chéng   yuē wù yǒu shì

Zi Zhan and Song people make agreement say WU have this

'Zi Zhan and the people of Song made an agreement saying: "They should not have this / It should not be the case that they have this.'

The employment of *wù* in the examples in (6a) and (6c) is almost non-existent in the LAC literature, but vestiges of the verbal function of *wù* appear in idiomatic combinations with high adverbials. These argue for a high position outside of *v*P of the modal negators *wú* and *wù* as in the examples in (7); i.e., in a functional projection within CP. In (7a) *wù* precedes the high modal particle/adverb *yōng* 庸, a marker of rhetorical questions. The high position of *yōng* is evidenced in (7b) where it precedes the epistemic adverb *bì* 必 'certainly, necessarily' in a rhetorical question marked by the SFP/Q *hū* 乎. *Bì* as an epistemic adverb appears in the CP layer, preceding temporal and aspectual adverbs; the example has an epistemic interpretation. In (7c) the high adverb *nǎi* 乃 'thus, thereupon' follows the negator *wú* 毋. *Nǎi* is a CP adverb; the example again has an epistemic interpretation. Contrastingly, the example in (7d) illustrates the regular position of deontic *wù* 勿 in the TP layer without any further marking. The lower position is evidenced by the position of *wù* following the epistemic adverb *bì* 'certainly'.[8] The default position of deontic negators is represented by (7e). Two different analyses are possible for WU according to the supposed stage of grammaticalization: 1) The verbal head of WU is still transparent, the negative prefix *m-* is the overt reflex of the covert NEG

in [Spec,PolP] at LF; 2) WU has already been fully grammaticalized as a negative adverb appearing overtly in [Spec,Mod₁P], the modal head is covert. The introduction of a POL head in the derivation is discussed more comprehensively in section 3. According to the examples in (7), two different positions for the modal negative marker can be proposed, one in the CP and one in the TP layer; both grammaticalized from a modal verb with a negative prefix. In the CP layer the negative modal verb appears idiomatically in combination with a CP adverbial, frequently in rhetorical questions; in the TP layer it expresses prohibition. In the CP layer, the negative marker appears as the specifier of a high PolP (Meisterernst 2018). This is represented by (7f).

(7) a. 不如聽之以卒秦，**勿庸**稱也以為天下。 (*Zhangguo ce* 11.10.2, 2nd c. BCE)

Bù rú   tīng zhī   yǐ zú   Qín

NEG be.like listen 3OBJ CON finish Qin

wù   yōng *chēng   yě   yǐwéi tiānxià*

NEGmod yong mention NOM   make empire

'It would be better to listen to them and let Qin succeed, but it **should not** be announced and made to [an affair of] the empire.'

b. 所效者**庸必**得幸乎？ (*Zhanguo ce* 25.25.5, 2nd c. BCE)

*Suǒ xiào   zhě **yōng bì**   dé   xìng hū*

REL follow REL RHETQ necessarily obtain favor SFP/Q

'Is what follows that they are really **necessarily** obtaining favor?!'

c. 將待後，後有辭而討焉』，**毋乃**不可乎？ (*Zuozhuan Xuan* 15, LAC)

Jiāng dài hòu   hòu   yǒu cí   ér tǎo   yán

FUT   wait successor successor have excuse CON hold.accountable PREP.3OBJ

wú   nǎi *bù kě   hū*

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NEGmod thenNEG possible SFP/Q

'If we will wait for a successor, and if the successor has excuses and we hold him ac-

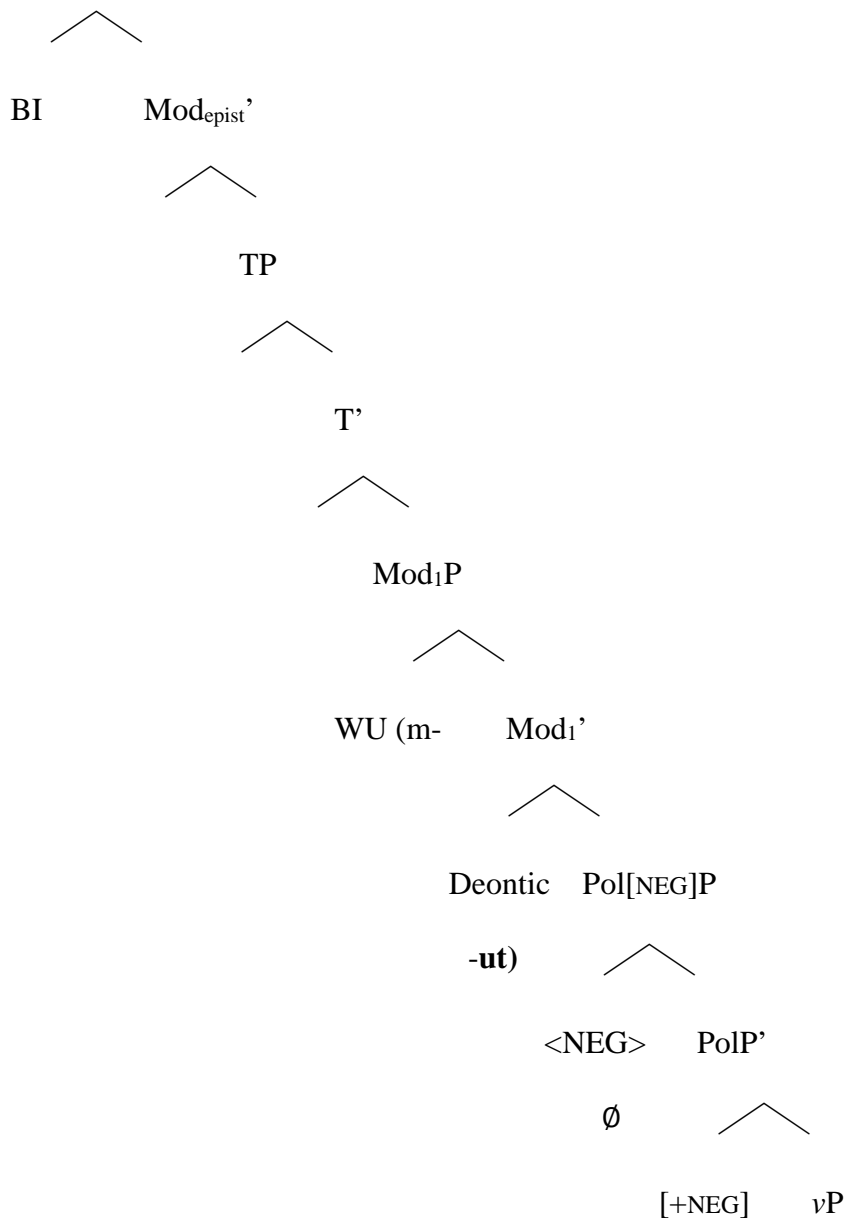countable for it, **should** that **not** be inappropriate?!'
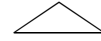
d.   王必勿與。」 (*Zhanguo ce* 20.10.18, LAC-EMC)

Wáng   bì   wù   yǔ

Wang   certainlyNEGmod give

'Your majesty certainly should not give it.'

e.   ModₑₚᵢₛₜP

　　　　　　／＼

　BI　　　　Modₑₚᵢₛₜ'

　　　　　　　／＼

　　　　　　TP

　　　　　　／＼

　　　　　　　T'

　　　　　　　／＼

　　　　　　　Mod₁P

　　　　　　　　／＼

　　　　　WU (m-　　Mod₁'

　　　　　　　　　／＼

　　　　　　　Deontic　Pol[NEG]P

　　　　　　-ut)　　／＼

　　　　　　　　<NEG>　　PolP'

　　　　　　　　∅　　　／＼

　　　　　　　　　　[+NEG]　　*v*P

17

$$\overline{\triangle}$$

f. [CP [PolP WUYONG/NAI [Pol' [ModPepist [TP [vp]]]]]]

According to Djamouri (2004), the modally neutral negative marker *bù* 不, can appear in the same position as *wù* 勿 in the Oracle Bone Inscriptions. Djamouri (2004) defines *bù* 不 as the non-modal 'attributive' negator of descriptive predication. Djamouri (1991) claims that *bù* in the OBI can express a polemic assertion (assertion polémique), when it is employed with transitive verbs; he cites the example in (8a) for this function. This could correspond to a focalization function connected to polarity, which in LAC is still attested in rhetorical questions with the modal adverb *yì* 亦. *Bù* can only precede modal adverbs in marked contexts such as rhetorical questions, as in the examples (8b) and (8c). The regular syntactic position of *bù* is briefly discussed in the next section.

(8) a. 不父乙咎婦好 (*Heji* 6,032 recto, cf. Djamouri 2004: 269)

Bù fù Yǐ jiù fù Hǎo

BU father Yi overwhelm lady Hao

'It is not [the ancestral] Father Yi who overwhelms Lady Hao.

   b. 有朋自遠方來，不亦樂乎？ (*Lunyu* 1.1, LAC)

*Yǒu péng zì yuǎn fāng lái **bù yì** lè hū*

Have friend PREP distant region come NEG MOD happy SPF/Q

'To have a friend come from afar, is this **not** delightful?' → this is very delightful!

   c. 晉之啟土，不亦宜乎？ (*Zuozhuan, Yin* 11, LAC)

*Jìn zhī qǐ tǔ **bù yì** yí hū.*

18

Jin GEN open territory NEG MOD appropriate SFP/Q

'That other people do not come, is that **not** appropriate!? → That is/would be entirely

appropriate!

2.3 Negation in LAC and the syntactic position of bù 不

The regular position of a negator in Chinese is preverbal, only *v*P internal material is per-

mitted between NEG and V. As we will see in the ensuing discussion, this position can differ

from the semantic scope of negation with regard to AUXmod; i.e., the PF realization of the

combination NEG+MOD can differ from its position at LF. The examples in (9) show the regu-

lar position of *bù* with regard to VP in LAC. In (9a) the epistemic modal adverb *bì* 必 pre-

cedes *bù*. When *bì* is preceded by *bù* = *bù bì*, *bì* has to be analyzed as verb 'need, must' (see

example 29 below); in (9b) *bù* precedes the applicative YI-phrase, which is *v*P-internal (Edith

Aldridge 2012).

(9) a. 「五父**必不**免，不賴盟矣。」 (*Zuozhuan, Yin* 7, LAC)

    *Wúfù **bì**   **bù** miǎn bù lài méng yǐ*

    Wufu certainly NEG escape NEG profit covenant SFP

    'Wufu will certainly not escape, he will not profit from the covenant.'

  b. 吾**不**以妾為姒。 (*Zuozhuan, Cheng* 11, LAC)

    *wú**bù** yǐ qiè   wéi sì*

    1P NEG YI concubine make sister.in.law

    'I will not consider a concubine as my sister in law.'

Aldridge (2010, 2011) propose an analysis of *bù* as adjunct of *v*P in LAC and not as project-

ing a NegP in examples such as (9b). Syntactic tests provided in Zeijlstra (2004: 154f) for the

adjunct status of negations in Non Negative Concord languages provide evidence for the analysis of NEG in LAC and (E)MC as adjunct or specifier ('why not' test). This is in contrast to the head status proposed for preverbal negative markers e.g, in Zeijlstra (2004).

Contrary to the system of negators in LAC and MC, which still requires more investigation, the exact functions and the scope relations of negation in Modern Chinese have been discussed comprehensively and controversely.[9] *Bù* is one of the two main negators of Modern Chinese, *bù* 不 'not', and *méiyǒu* 沒有 'not (yet)'. The two negative markers are in complementary distribution; *méiyǒu* does not exist yet in LAC and MC. In the linguistic literature, the two negators have been related to different modal and/or aspectual heads and to verbal aspect (Hsieh Miao-ling 2001). Huang (1988) pointed to the incompatibility of *bù* with aspectual *le* 了 (Huang 1988: 284). He proposes that *bù* attaches to V^0 [V^0 *bù* [V^0 V]], and he argues that *bù* takes narrow scope with respect to perfective aspect, which results in semantic incompatibility. In LAC, the situation is different. Although LAC has a particular aspectual negative marker *wèi* 未 'not yet', corresponding roughly to *méiyǒu*, the negative marker *bù* may appear in combination with otherwise marked perfective aspect as in the examples below. The two adverbs *jì* 既 and *yǐ* 已 are markers of the perfective aspect (Wei Pei-chuan 2015, Meisterernst 2016). The sentence final particle *yǐ* 矣 is comparable with Modern Mandarin sentence final *le* 了, it is either an aspectual head or the head of FinP, referring to a change of state. In the LAC examples below, negation is clearly within the scope of perfective aspect, the reverse order is not attested with *bù*. This distinguishes examples such as in (10) from examples with *méiyǒu* in Modern Mandarin.

(10) a. 既不獲命矣，敢煩大夫， (*Zuozhuan, Xi* 28, LAC)

    Jì   bù   huò   mìng yǐ gǎn fán   dàifū

ASP NEG receive order SFP dare bother dignitary

'Since he has still not received his orders, he dares to trouble you dignitaries.'

b. 夫二君者，固已不欲矣。 (*Zhanguo ce* 23.1.2, LAC-EMC)

fú   èr   jūn   zhě   gù   yǐ   bù   yù   yǐ

that two ruler NOM certainly ASP NEG wish SFP

'Those two rulers certainly already don't want that.'

c. 今太子聞光壯盛之時，不知吾形已不逮也， (*Zhanguo ce* 31.5.11, LAC-EMC)

jīn   tàizǐ   wén Guāng zhuàngshèng zhī shí

Now crownprince hear Guang prime   GEN time

bù   zhī   wúxíng yǐ   bù   dài   yě

NEG know I   shape ASP NEG reach SFP

'Now, my crown prince has heard of me when I was in my prime, he does not know

that my body already does not suffice anymore.'

The scope relations of the aspectual negative marker *wèi* differ from the marked examples in

(10). In the examples in (10) we have the scope relation 'already > NOT', the negator is in

the scope of the aspectual adverb, whereas in (11) with *wèi*, we have NOT > already/yet, i.e.

méiyǒu in Modern Mandarin corresponds to *wèi* and not to *jì/yǐ+bù*. In (11a), *wèi* is preceded

by another aspecto-temporal adverb *shàng* 尚 'still'. In (11b), *wèi* follows the modal adverb

yì 亦 'also', this provides evidence for its position in the TP layer. In (11c), *wèi* is combined

with the habitual adverb *cháng* 嘗, expressing past tense (experiential aspect according to

Wei 2015) or habitual aspect in the past; in the combination *wèi cháng*, *wèi* always expresses

habitual aspect in the past 'never in the past'. The *v*P in (11c) is negated as well; the two ne-

gators *wèi* and *bù* cancel each other out: 'always in the past'. Aspectual adverbs have been

proposed to occupy the specifier position of the Outer AspP (Meisterernst 2016), and not the

head position of the Outer AspP. Although *wèi* is in complementary distribution with the aspectual adverbs *jì/yǐ* 'already', it probably differs from *jì/yǐ* syntactically. Two analyses of *wèi* seem to be possible: either as the (negated) verbal head of AspP, or as a NegP taking AspP as its complement, similar to the analysis proposed in Hsieh (2001: 59).

The function of the aspectual negative marker *wèi* has been compared with *méiyǒu* in Modern Mandarin (Lin Jo-Wang 2003, Meisterernst 2015). The close relation between negation and aspect was also emphasized in Ernst (1995). Ernst (1995: 702) proposes that *méi* is a negative marker in the specifier position of *yǒu*, which is the aspectual head. Hsieh, by contrast, proposes that *méi(yǒu)* actually constitutes the head of a NegP within AspP. *Wèi* in LAC (Old Chinese *m[ə]t-s according to William Baxter and Laurant Sagart 2014) can be derived from a verbal, possibly aspectual head with a negative morpheme affixed to it. The example in (11d) shows that *wèi* can still function independently as a verb expressing negation of an unspecified event in LAC. For LAC, we propose that *wèi* is the head of a NegP, which takes Outer Aspect as its complement. This analysis accounts for (11c) with the aspectual adverb *cháng* following *wèi*; *cháng* supposedly appears in the specifier of OAspP; the analysis of this is given in (11e). (11f) shows the derivation of the verbal negative marker *wèi* following the reconstruction of Baxter and Sagart (2014); the proposed analysis is similar to the analysis of the internal structure of the modal negator *wù* in (6b).[10]

(11) a. 燕王尚未許也。 (*Zhanguo ce* 24.7.6, LAC-EMC)

  Yān wáng shàng **wèi** *xǔ* *yě*

  Yan king still NEG_{asp} agree SFP

  'The king of Yan had still **not yet** agreed.'

 b. 人之可盡不可盡亦未可智。 (*Mozi* 2.73.1, LAC)

  rén *zhī* *kě* *jǐn* *bù* *kě* *jǐn*

people GEN KE be.exhausted GEN KE be.exhausted

yì **wèi** *kě zhì*

also NEGasp KE known

'Whether men can be exhausted or not can likewise **not be known**.'

c. 「昔先大夫相先君適四國，**未嘗**不為壇。 (*Zuozhuan, Xiang* 28, LAC)

Xī xiān dàifù xiàng xiān jūn shì sì guó

Formerly former dignitary assist former ruler go.to four state

wèi cháng bù *wéi tán*

NEGasp ASP NEG make altar

'In ancient times when the former dignitaries assisted the former ruler to go to the
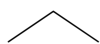
Four States, they **always** made an altar.

d. 若猶**未**也。階之為禍。 (*Zuozhuan, Yin* 3, LAC)

ruò yóu **wèi** *yě jiē zhī wéi huò*

if still be.not.yet SFP step OBJ be disaster

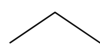'If it is still not like that, you will give him a way to cause disaster.'
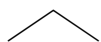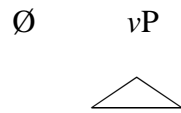
e.   TP

        NegP

            Neg'
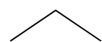
              WEI   OAspP

                  chang   OAsp'

23

Ø   *v*P
          △

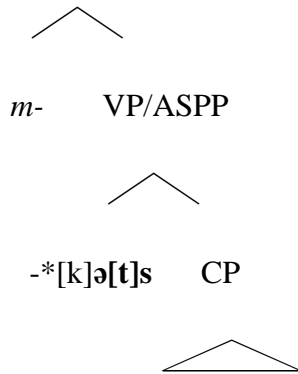   f. VP/ASPP
         ∧

m-   VP/ASPP
        ∧

-*[k]ə**[t]s**   CP
          △

Aspectual negative markers are frequently analyzed as heads (see Elly van Gelderen 2011);
the negator in the specifier is adjoined to the aspectual head, which would accordingly be re-
analyzed as a negative aspectual head. In LAC, however, the head of the Outer AspP is prob-
ably covert. Aspectual adverbs such as the perfective adverbs *jì/yǐ* in (10), but also the habit-
ual adverb *cháng* in (11c), allegedly appear in [Spec,AspP] in complimentary distribution
(Meisterernst 2016); they are not mandatory for the aspectual reading.[11] In the examples in
(10) with NEG following the aspectual adverb, the aspectual adverb is in the specifier of the
Outer Aspect P; the head is Ø. NEG is adjoined to *v*P and has scope only over *v*P. In the exam-
ples in (11), *wèi* takes the AspP as its complement; the Asp head is again Ø. This accounts
well for the regular occurrence of *wèi* in combination with the habitual adverb *cháng* in (11c).
For *bù*, Ernst (1995: 695) proposes that it "requires unbounded aspectual situations", assum-
ing that it can attach to an overt or covert aspectual head. Ernst follows Huang's (1988) anal-
ysis, who "posits an empty modal to which *bù* cliticizes" (Ernst 1995: 694). Ernst also shows
that *bù* can attach to a higher projection and that the scope of *bù* is not limited to V.[12]

(12) a. *Jinrong bu   mashang   huida* (cf. Ernst 1995: 672)

   Jinrong not immediately answer

   'Jinrong doesn't answer immediately.'

   b. *Tamen bu   huixiang   bang mang*

   They   not each-other help busy

   'They don't help eachother.'

Ernst analyzes *bù* as a proclitic adverb which can appear in the Spec of AuxP, or in the Spec of VP, cliticizing to the following element. This explains that it can precede a number of adverbial expressions. The fact that *bù* cannot appear in a position preceding epistemic or temporal adverbs shows that it is lower in the hierarchical structure of the IP than those (Ernst 1995: 684). The examples in (10) demonstrate that *bù* in LAC by default appears lower than AspP. Xiong Jiajuan (2017: 270f) proposes that *bù* attaches to V^0, or the first identifiable morpheme it precedes as long as it is directly related to V^0.

  Very similar constraints hold for *bù* in LAC as has been shown in (9). However, although *bù* can be detached from the matrix verb by e.g, a functional category such as a light verb or an applicative head, by *xiāng* 相 'mutually' and the reflexive *zǐ* 自 (both function as internal arguments), and by manner adverbs, it usually attaches directly to modal auxiliary verbs.[13] At least this seems to be the case for true auxiliaries and for modal verbs grammaticalized into a functional category. Possibly, some phonological rule requires that *bù* (or the negative prefix *m-*) always attaches directly to a defective V^0, whether it is a copula or an auxiliary, including modals (see also Huang 1988: 287). Also light verbs or applicative heads such as *yǐ* 以 and *yǔ* 與 mostly seem to follow this rule; the latter all grammaticalize from lexical V^0. As already mentioned, for LAC some evidence for the non-head status of *bù* can be provided by the 'why not' test proposed in Zeijlstra for the determination of the status of the NEG as head or

as specifier (Zeijlstra 2004: 154); heads do not allow the *wh-* word preceding NEG. Example (13) shows the *wh-*word *hé* 何 'why' preceding *bù*.

(13) 何不吾諫？」 (*Zuozhuan, Ai* 11)

    Hé   bù wú jiàn

    Why NEG me admonish

    'Why did you not admonish me?'

2.4 Double negation in Chinese

  Chinese is a double negation language. The rule of double negation is $\neg\neg p \leftrightarrow p$ (Zeijlstra 2004: 58), the two negators cancel each other out as in (14a) from Zeijlstra (2004). According to Zeijlstra (2004: 58), true double negation, i.e., two negations in one clause as in (14a), is not very frequent cross-linguistically, whereas double negation in two different clauses is. Double negation is well attested in Archaic Chinese, it is relatively frequent with the negative existential verb *wú* 無 'not have' in both orders *bù wú* 不無 and *wú bù* 無不.[14] Double negation is particularly frequent with the negative quantifier *mò* 莫 'no one'; other combinations are less frequent or non-existent.[15] The syntactic constraints of double negation in Archaic and Middle Chinese still warrant more research, but both cases, true double negation within one clause and double negation in two different clauses, seem to be possible.[16] (14b) is an example of double negation: NEGmod NEG. This is equivalent semantically and syntactically to double negation with a possibility (or deontic) modal NEG+NEGposs+NEG, discussed below. If the analysis proposed is correct, these cases have to be considered as representatives of true double negation. As to be expected for a language with double negation, Chinese does not seem to allow paratactic negation. Typical DN languages apparently do not (Zeijlstra 2004). Paratactic negation appears in French with semi-negative verbs such as 'fear' in (14c); these

verbs require a 'semantically empty' negation in their complement. In LAC, the negative

marker in the complement of semi-negative verbs, such as *jìn* 禁 'warn, prohibit', and *jù* 懼

'fear', clearly has the semantic function of expressing negation; in (14d) with the deontic ne-

gator *wù*, the actual prohibition is expressed.[17] In (14e), a negative situation is to be feared. In

both examples, the negators appear in separate clauses respectively. The Chinese examples

(14d) and (14e) are not cases of double negation; the semantically negative verb does not in-

duce the cancellation of the negator in its complement; thus they are different from the

French case of paratactic negation.

(14) a. Mary will *not not* show up ↔ Mary will show up.

b. 『毋不有功於民，勤力廼事。 (*Shiji*: 3, 97, 100 BCE)

wú   bù   yǒu gōng yú   mín   qín lì   nǎi shì

NEGmod NEG have merit PREP people exert strength then serve

'You must have success [in dealing] with the people, exert your strength and serve

thus.'

c. J'ai   peur qu'il   (ne) vienne.

I am afraid that he NEG comes.SUBJ

'I am afraid that he comes.' (Zeijlstra 2004: 65).

d. 禁舊客勿出於宮。   (*Zuozhuan Zhao* 18, LAC)

*Jìn   jiù kè   **wù**   chū yú   gōng*

Prohibit old guest NEGmod leave PREP palace

'he **forbade** older visitors (**not) to** leave the palace / he announced a prohibition of the

kind that older visitors were not allowed to leave the palace.'

e. 且子懼不孝，無懼弗得立。

Qiě   zǐ jù bù xiào wú   jù fú dé lì

Furthermore son fear NEG filial NEGmod fear NEG can establish

'Furthermore, as a son you should fear not to be filial, and not that they do not en-

throne you.'

Following this brief and tentative analysis of the syntax of negative markers in LAC, the

next section focusses on an analysis of the semantic scope of negation and its syntactic repre-

sentation in combination with modal auxiliary verbs.

3. Modal verbs in combination with negation

In this section, the scope effects of negation on the three different categories of modals in-

troduced in the first paragraph will be discussed. The modals at issue are, 1) the modal verbs

of possibility *kě* 'possible, can' and *dé* 'obtain, manage to, can'; they can appear as both

Mod$_2$ and Mod$_1$; 2) the deontic modals *dāng* 當 'correspond, should', and *yīng* 應 'corre-

spond, ought, should', which express deontic modality; they belong to the category Mod$_1$, be-

cause they always scope over negation;[18] and 3) the modals *bì* 必 'necessary, must', and *xū*

須 'wait for, must, need'. They express necessity modality, but they seem to belong to the

category of Mod$_2$, because they are within the scope of negation.

The deontic modals of the groups 2) and 3) do not display scope variations with regard to

negation within their respective category. In contrast, modals of group 1) (MOD$_{poss}$) receive

two different interpretations according to the scope of negation: a) the possibility reading

NEG[POSSIBLE, NEG scopes over MOD; b) the deontic reading NECESSARY[NOT, NEG has nar-

row scope with respect to the necessity operator. The latter reading is possible, because the

two readings 'it is necessary that not *p*', and 'it is not possible that *p*' are logically equivalent:

$\Box \neg p \leftrightarrow \neg \Diamond p$.

According to a cartographic approach to modality, the possibility and the deontic readings are allegedly hosted in two different positions in the hierarchy of modals. Due to the relatively fixed word order of LAC and MC, syntactic differences between the two modal readings are difficult to test. However, the semantic differences are reflected in the scope features of the negative marker with respect to the modal. Importantly, the deontic readings of the possibility modals in LAC are generally connected to polarity contexts. Therefore, the present analysis makes use of a polarity head, in which negation is interpreted at LF. This proposal is inspired by Cormack and Smith (2002), who introduced a polarity head in the TP layer in order to distinguish a circumstantial modal (Mod_2) from a deontic modal reading (Mod_1). As proposed in Cormack and Smith (2002), the polarity head divides the realm of deontic from that of circumstantial modality. Additionally, the polarity head accounts for the distinction of the two different deontic modal categories 2) and 3) into Mod_1 and Mod_2.

Polarity is a function that takes a proposition and returns either the same proposition [Pol_{pos}] or the reverse proposition [Pol_{neg}] (Ivano Caponigro & Maria Polinsky 2008). Typical polarity contexts are involved in the early stages of grammaticalization of LAC modals from lexical to functional categories in the CP/TP layer. As discussed in section 2, NEG in LAC and MC is subject to particular constraints. The general negator *bù* does not head its own projection, it by default attaches directly to a defective verbal, i.e. a modal head, presumably as its specifier. This means that its semantic scope can differ from its syntactic position. The Pol head in TP, which hosts NEG at LF, is introduced to account for the particular semantic scope of NEG with regard to deontic modals (Mod_1). In the complement of a negative Mod_1, the PolP always returns the polarity reverse to its overt specification: in Pol[NEG]P, the specifier position of PolP remains empty. In order to reverse its polarity to Pol[POS]P, the PolP needs to contain an overt negative marker in its specifier. For Mod_{poss} (Mod_2) to be interpreted as deontic Mod_1, NEG has to be interpreted in the specifier of the PolP at LF to check the [+NEG]

feature of the PolP. Since the negative marker has to attach to the modal head and an overt NEG in [Spec,PolP] would result in the reverse polarity [Pol_{pos}], the NEG at [Spec,PolP] has to be covert at PF in order to obtain the correct interpretation. Chinese is not a Negative Concord language and two negations cancel each other out (see ex. (23), (24) below). In order to obtain its deontic reading, the possibility modal has to move up through PolP to the position of Mod_1P, the negator is merged in [Spec,Mod_1] directly. This results in the correct PF order of NEG MOD. According to the constraints on NEG-elements and defective verbal heads, the negator always appears in [Spec,Mod_1]. The result of this operation is syntactically identical to synthetic modal negation, which has been analyzed as consisting of a modal head and a prefixed negative element, but which shows the same scope of NEG with respect to the inherent necessity operator. The fact that two different readings are still available in Middle Chinese for NEG MOD_{poss}, distinguishable only by the scope of negation, argues for a moving analysis,[19] i.e. for an analysis which accounts for the fact that the grammaticalization process from Move to Merge has not been completed yet (see Roberts and Roussou, particularly 2002, 2003).

3.1 Possibility modals + NEG

The most important modals of possibility in Late Archaic Chinese are *kě* 可 'possible, can', *néng* 能 'able to, can', and *dé* 得 'manage to, can'. *Kě* and *néng* are the oldest modal verbs of possibility in Chinese, they are already frequently attested as modal verbs in .e.g, the *Shijing* (10th – 6th c. BEC).[20] They both derive from stative verbs, but they differ syntactically in two relevant ways. First, *kě* appears in a typical raising construction, whereas *néng* rather functions as a control verb in LAC, i.e., the subject of *néng* and the subject of the embedded verb are identical.[21] *Kě* is different in this respect. The second syntactic difference between *kě* and *néng* concerns the fact that different analyses are mandatory for the complement of *kě* in AC

depending on the presence or absence of the functional head *yǐ* 以. Without *yǐ* the complement of *kě* is always passivized (unaccusative), referring to a resultant state, the internal argument of the complement verb appears in subject position.[22] In order to retain the original argument structure of the complement V of *kě*, the functional head *yǐ* has to follow *kě*. This constraint does not exist for *néng*. In EMC, the constraint on the complement of *kě* weakens and *yǐ* seems to become less mandatory. The examples in (15a-c) demonstrate the constraint on the complement of *kě* in LAC and its weakening in EMC.[23] *Dé* only starts to function as a modal verb in LAC. It is a typical achievement verb and differs syntactically and semantically from both *kě* and *néng*. In past tense contexts, *dé* obtains an implicative reading (Meisterernst ms.) (15d) exemplifies modal *dé* in a non-past context, and (15e) exemplifies the implicative reading of *dé* in past tense contexts (Meisterernst ms.).

(15) a. 匹夫猶未可動，而況諸侯乎！ (*Zhuāngzǐ* 4.2.1, LAC)

    Pǐfū   *yóu wèi*   *kě*   *dòng ér*   *kuàng zhūhóu*   *hū*

    Commoner still NEG~asp~ KE move CON rather feudal.lord SFP

    'If even a commoner cannot be moved, much less can a feudal lord!'

  b. 子犯知齊之不可以動， (*Guóyǔ Jinyǔ*, LAC)

    Zǐ Fàn zhī   *Qí zhī bù*   *kě*   *yǐ dòng,*

    Zi Fan know Qi GEN NEG can YI move

    'Zi Fan knows that Qi cannot move.'

  c. 「臣愚以為可賜爵關內侯 (*Hànshū* 36: 1947, EMC)

    chén yú   *yǐwéi kě*   *cì*   *jué guān nèi*   *hóu,*

    I   stupid assume KE bestow rank pass inner marquis,

    'I am stupid, but I assume that you can / should bestow upon him a position and make

    him marquis of Guannei, …'

d. 「… 然不自意能先入關破秦，得復見將軍於此。 (*Shǐjì*: 7,312, EMC)

rán bù zì yì néng xiān rù guān pò Qín

but NEG self think able.to before enter pass destroy Qin

dé fù jiàn jiàngjūn yú cǐ

DE again see general at this

'… but I do not think myself that I am able to enter the gate and destroy Qin, and to

be able to see the general again here.'

e. 克舍之，丑父遂得亡歸齊。 (*Shǐjì*: 32,1497, EMC)

Kè shě zhī Chǒufù suì dé wáng guī Qí

Ke release OBJ Choufu thereupon DE flee return Qi

'Ke released him, and Choufu (managed thereupon to) could thereupon flee and re-

turn to Qi.'

In this analysis, only the two modal verbs KE and DE will be discussed; despite considera-

ble syntactic and semantic differences, they can be employed quasi-synonymously particu-

larly in negative contexts in LAC and (Early) Middle Chinese. The ability modal NENG is

syntactically and semantically different, and it is thus excluded from the discussion. It usually

does not refer to deontic modality in LAC and EMC.

In combination with negative markers, two different readings can be obtained with KE and

DE, a) a possibility reading; b) a deontic reading. In the ensuing discussion some evidence

for a syntactic distinction of the different modal readings of NEG+MOD will be provided.

3.1.1 NEG + MOD$_{poss}$

The examples (16a) with KE and (16b) with DE represent typical instances of the negated

dynamic modals of possibility. In both examples, the negative marker *bù* scopes over the

modal NEG[POSSIBLE; the deontic necessity reading NECESSARY[NOT is not implied. No obligation is expressed; accordingly, the modals are analyzed as belonging to the category of Mod₂. This is reflected by the analysis in c., the modal is merged in Mod₂P, the negative marker *bù* appears in [Spec, Mod₂P]. The scope features of the negative marker are reflected in the word order of *bù* and MOD.

(16) a. 此城最勝。諸方所推。不可破壞。 (*Taishō* 1, 1, p. 12, MC)

    *Cǐ   chéng zuì   shèng   zhū fāng   suǒ tuī   **bù kě**   pòhuài*

    Thiscity   most superior PL   directionREL press NEG KE destroy

    'This city is most superior, from whatever direction it is pushed against, it cannot be destroyed.'

Paraphrase: It is NOT POSSIBLE that it is being destroyed ≠ it is necessary that it is NOT being

destroyed

NOT[POSSIBLE: root / circumstantial possibility.

    b. 我等梵天所化。是以無常。不得久住。 (*Taishō* 1, 1, p. 69b, MC)

    *Wǒ děng fàntiān suǒ huà   shìyǐ   wúcháng   **bù dé** jiǔ zhù*

    I   PL   Brāhma REL change therefore   impermanentNEG DE longstay

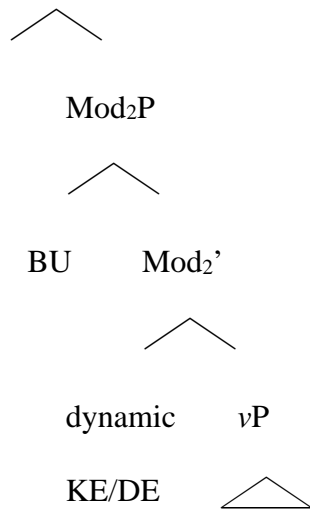   'We are who god Brahmā changed, therefore we don't have permanence and cannot remain long.'

Paraphrase: we do NOT MANAGE to remain long.

NOT[POSSIBLE: circumstantial.

   c.   *v*P

          v'

```
              Mod₂P

         BU        Mod₂'

              dynamic      vP
              KE/DE
```

The examples in (17) represent the deontic necessity reading with the modal KE. However, the examples in (16) demonstrate that the logical possibility of a necessity interpretation does not have to be realized. In Middle Chinese, analytic prohibition by NEG+MOD increases in comparison to the synthetic modal negators discussed in section 2. Both examples in (17) clearly express deontic necessity, the necessity operator scopes over negation: NECESSARY[NOT. In both cases, there is still a possibility that the proposition become true, but according to necessity it should not.

(17) a. 我今寧當捨此身命，不可毀破三世諸佛所制禁戒。 (*Taishō* 4, 202, p. 381b, MC)

*Wǒ jīn níng   dāng shě   cǐ shēn mìng **bù kě** huǐpò*

I   now MODepistemic DANG abandon this body life   NEG KE destroy

sān   shì   zhū fó   suǒ zhì   jīnjiè

three period PL   Buddha REL determine precept

'I now should rather abandon this body and life; I must not destroy the precepts which the various Buddhas of the three periods determined.'

Paraphase: it is NECESSARY that I NOT destroy.

NOT POSSIBLE = NECESSARY[NOT

b. 「世有惡咒及餘蠱道，事不可輕，儻能有是。」(*Taishō* 4, 0202, p. 432c, MC)

Shì yǒu è zhòu jí yú gǔ   dào

Time have bad curse and other noxious methods/witchcraft

shì **bù kě** qīng tǎng   néng yǒu shì

affair NEG KE light maybe_{epistemic} can   have this

'If a time has a bad omen and other noxious methods, the affairs must not be taken

lightly, maybe this can be the case.'

Paraphrase: it is NECESSARY for the affair NOT to be taken lightly.

NOT POSSIBLE = NECESSARY[NOT.

The examples in (18) represent the modal verb DE negated by the neutral negator *bù*; in the

examples in (19) DE is negated by a modal negator. In both (18b) and (19b) the modal predi-

cate appears in the complement of a verb of command, in (18) with the neutral negator *bù* and

in (19) with the modal negator *wù*. The examples demonstrate that a modal negator could be

employed interchangeably with the neutral negator *bù* when appearing in combination with

the modal auxiliary DE. The fact that synthetic modal negators apparently lost some of their

transparency as modal markers probably triggered the development of analytic modal nega-

tion with a new overt modal head. The syntactic analysis as a movement analysis of the

modal in the examples (17) and (18) is in (18c). With a modal negator, no movement of the

modal to the functional layer would be involved as in (19c). A modal negator is analyzed as

being located in Mod₁P, and in this case the modal auxiliary is merged directly in Mod₁P.

(18) a. 淨人益食不得相喚。但以手指麾。   (*Taishō* 51, 2085, p. 857b, MC)

Jìngrén yì shí **bù dé** xiāng huàn dàn yǐ shǒu zhǐ huī

Server   add food NEG DE mutual call.out only with hand show wave

35

'If the servers are supposed to add food, one must not call them, only wave with the

hands.'

Paraphrase: it is NECESSARY/OBLIGATORY NOT to call (out loud) to them.

NECESSARY[NOT = clear obligation, the theoretical possibility to call still exists.

b. 時優婆夷，聞佛世尊，正由我故，制諸比丘，不得食肉，

(*Taishō* 4, 202, p. 375c, MC*)*

Shí   yōupóyí wén fó   shìzūn,
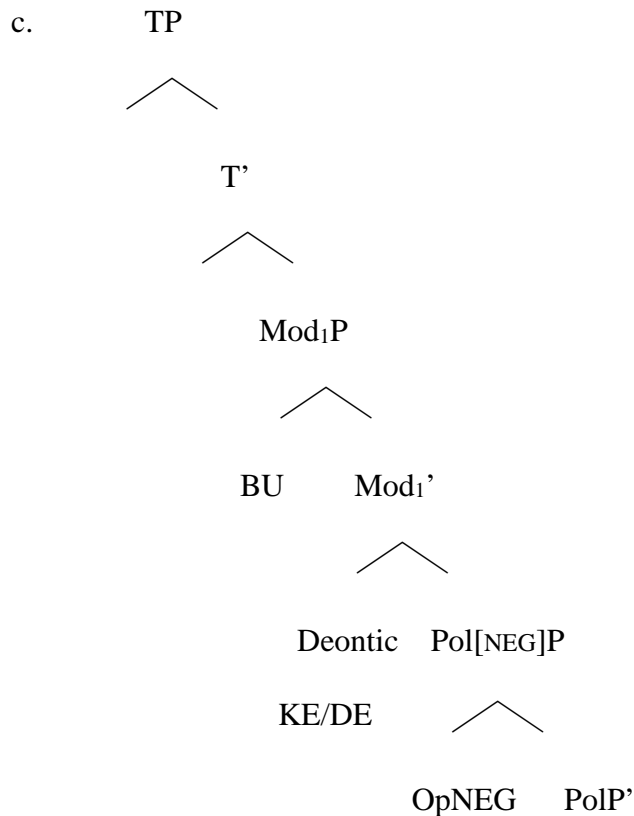
Time upāsika   ask   Buddha World-Honoured-One
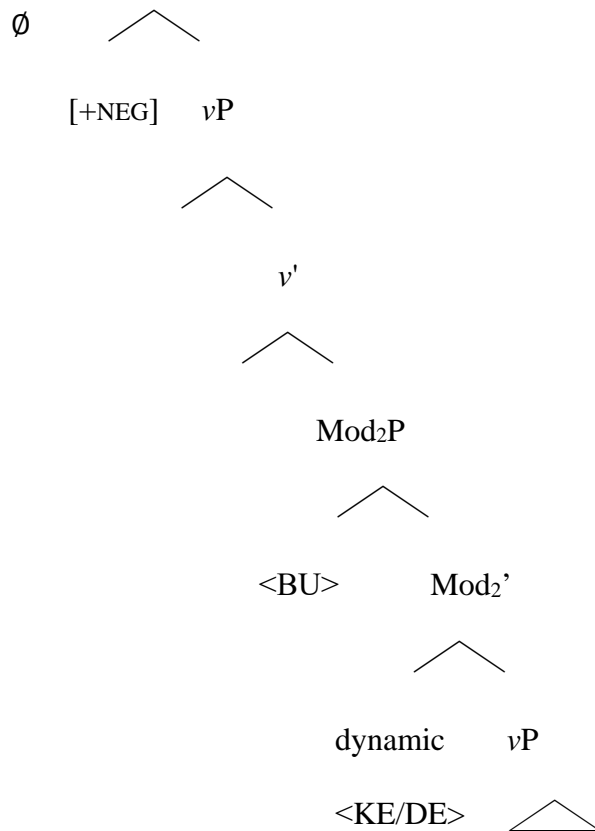
*zhèng yóu   wǒgù   zhì   zhū bǐqiū **bù dé** shíròu*

correct from I   reason determine PL bhiksū NEG DE eatmeat

'At the time a laywoman asked the Buddha: "World-Honoured-One, did you make

these corrections because of me and determined that the bhiksū may not eat meat."'

Paraphrase: put the obligation/NECESSITY on the bhiksū NOT to eat meat

NOT POSSIBLE = NECESSARY[NOT, in the complement of a causative verb of command.

c.   TP
        /\
            T'
          /\
            Mod₁P
           /\
        BU   Mod₁'
              /\
          Deontic   Pol[NEG]P
         KE/DE   /\
               OpNEG   PolP'

36

```
                    ∅        ╱‾╲
                [+NEG]    vP
                            ╱‾╲
                          v'
                        ╱‾╲
                     Mod₂P
                      ╱‾╲
                  <BU>    Mod₂'
                          ╱‾╲
                     dynamic   vP
                     <KE/DE>  ╱‾‾╲
```

(19) a. 『汝等勤作，勿得懈息。』以方便故，得近其子。

(*Taishō* 9, 0262, p. 17a, *Lotussutra*)

*Rǔ děng qín   zuò **wú** **dé** xièxí   yǐ fāngbiàn   gù   dé*

YouPL   diligent work NEGmod DE slacken withexpedient.means reason DE

jìn   qí zǐ

approach hisson

'"Work diligently and don't slacken." And with expedient means he managed to approach his son.'

Paraphrase: = it is NECESSARY that you do NOT slacken.

b. 夏五月，詔女年不滿十三以上，勿得以嫁· (*Beishi* 5, 253, 7ᵗʰ c. CE)

xià   wǔ yuè   zhào nǚ   niánbù mǎnshísān yǐ shàng

summer five month order womanyearNEG fill thirteen CON above

wù   dé   yǐ jià

NEGmod DE YI marry

'In the fifth month of summer an edict was issued that girls that were not thirteen

years or older should not be given in marriage.'

Paraphrase: it is NECESSARY that they are NOT being married

c.   TP
```
          TP
         /  \
            T'
           /  \
            Mod₁P
           /   \
        WU    Mod₁'
              /   \
         Deontic   Pol[NEG]P
           DE      /    \
              OpNEG    PolP'
                Ø      /    \
                  [+NEG]    vP
                            /\
```

$$c.\quad TP$$

Tree diagram:
- TP
  - T'
    - Mod₁P
      - WU
      - Mod₁'
        - Deontic DE
        - Pol[NEG]P
          - OpNEG Ø
          - PolP'
            - [+NEG]
            - vP
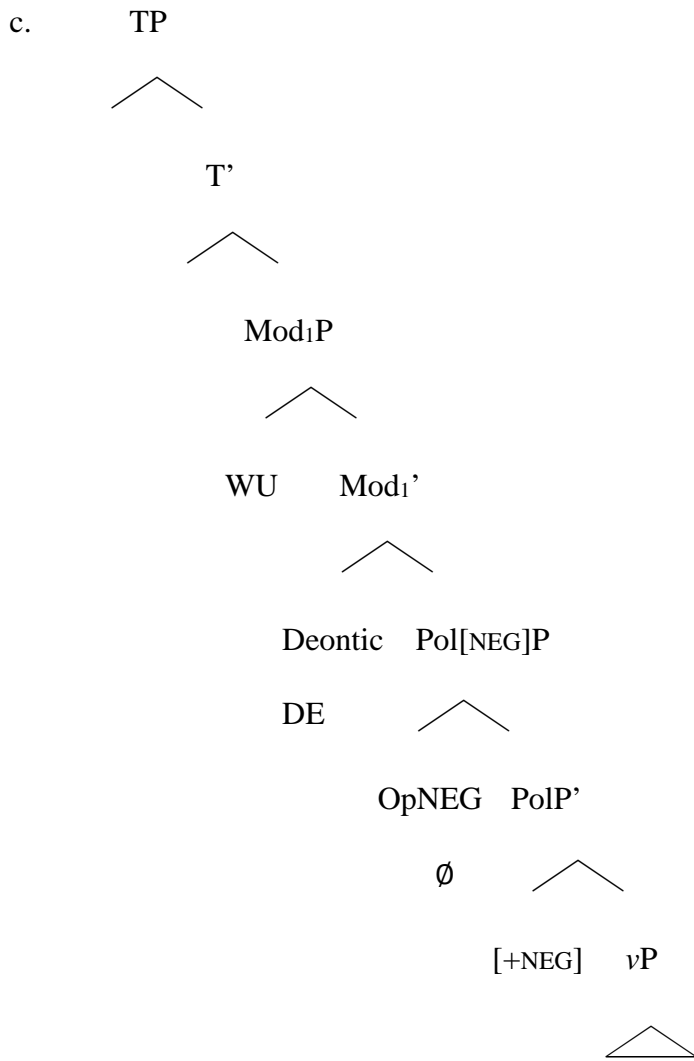
3.1.2 MOD$_{poss}$ + NEG

Besides the order NEG+MOD, the order MOD+NEG is attested, frequently in rhetorical ques-
tions. Rhetorical questions and negation are the two marked environments, which have been
identified as triggers for the development of the deontic readings of the possibility modals in
LAC (Liu 2000, Li 2001). Both environments involve polarity. The examples in (20) repre-
sent this employment with KE. Rhetorical questions imply an assertion of the opposite polar-
ity from what is apparently asked (Han 1998, 2002). Meisterernst (2018) following Han
(2002: 219) proposes a covert negative operator in CP to map onto negative polarity. Han
proposes the following analysis: in *Yes-no* questions, the pragmatic principle operating on

questions "interacts with the output of LF of rhetorical questions, driving them to undergo a post-LF derivation", forcing an operator, which she assumes is a covert *whether* to map onto negative polarity and to be isomorphic to negation; it takes scope over the entire sentence.

(20)   a. Didn't I tell you that writing a dissertation was easy?

   b.   CP

        NP   C'

        Whether

        ↓   didn't I tell you that writing a dissertation was easy

        ¬
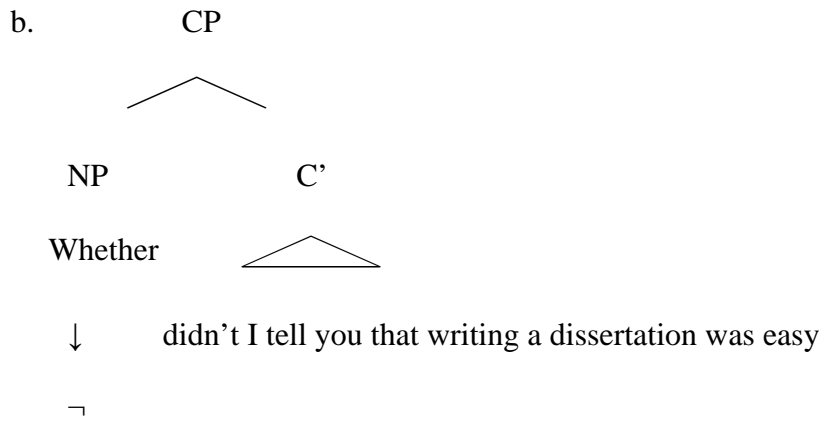
   c. ¬ [¬ (I told you that writing a dissertation was easy)]

   d. I told you that writing a dissertation was easy. (cf. Han 2002: 219).

This analysis can also account for the reverse polarity involved in rhetorical questions in LAC and MC. In this case, a positive modal in a rhetorical questions receives its reverse negative reading from the polarity head in CP. The negative marker preceding the complement verb of the modal is cancelled out resulting in a positive modal reading of the rhetorical question.

(21) a. 寧可不生如是念耶？   (*Taishō* 2, 100, p.420b, MC)

     *Níng   **kě bù** sheng   rúshì niàn   yé*

     Rather KE NEG produce such thought SFP

'Would it be possible maybe, not to have such thoughts? ⇒ It is necessary to have

such thoughts.[24]

¬∃x[x can be ¬ V] = NEG [POSSIBLE NEG V ⇒ NECESSARY[POS

b. 有是寵也，而知其過，可不謂恭乎！」 (*Hou Hanshu:*70; EMC)

*Yǒu   shì   chǒng   yě   ér   zhī   qí   guò   **kě   bù**   wèi   gōng   hū*

Have this favour SFP CON know POSS mistake KE NEG call decent SFP

'If he has these favorable points and knows his mistakes, is it possible / permitted not to

call this decent!'

Paraphrase: must one not call this decent?! ⇒ one must call this decent.

¬∃x[x can be ¬ V] = NEG [POSSIBLE NEG V = NECESSARY[POS ⇒ OUGHT[POS (less strong than

a.)

  The example in (22a) displays the same order MOD+NEG with DE, here in the reading 'man-

age to not V', i.e., with an implicative reading, the typical reading of DE in past tense con-

texts. This example does not involve a polarity reading, it is not a rhetorical question. The ne-

gator following DE is the deontic modal negative *wú* 毋, which functions as necessity opera-

tor (Mod$_1$) (see the discussion in section 2). In its basic reading, DE is a possibility modal,

i.e., it belongs to the category of 'Mod$_2$'. If this analysis were correct it would result in the or-

der of *possibility necessity* = Mod$_2$ Mod$_1$. This should not be possible and argues against the

status of *dé* as an auxiliary verb at that time at least in this construction. The modal negator

which is merged in a functional projection in CP/TP argues for a bi-clausal structure and for

dé as a lexical (premodal) verb expressing possibility; this is represented by the analysis in

(22b). The implicative reading of a possibility modal in (22) is not attested with KE+NEG.

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(22) a. 賴大臣爭之，及留侯策，太子得毌廢。　(EMC: *Shǐjì*: 9;395, 100 BCE)

Lài　dà　chén　zhēngzhī　jí　　　Liú hóu cè　　　tàizǐ dé　wú

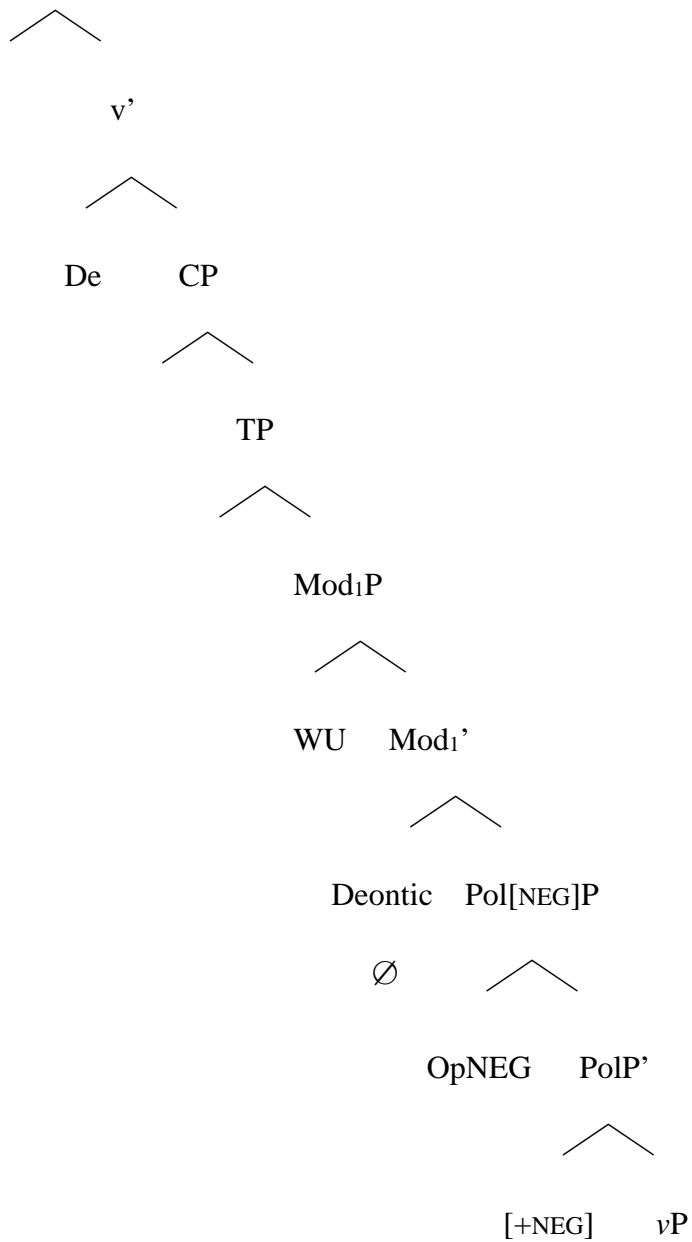Profit great　minister fight　OBJ　arrive.at Liu　lord scheme　heir DE　NEGmod

fèi

abolish

'He profited from the great ministers who disputed it, and as it came to the scheme of

lord Liu, the heir managed not to be abolished.'

b. *v*P

```
        vP
       /\
         v'
        /\
      De   CP
           /\
            TP
            /\
          Mod₁P
          /\
        WU   Mod₁'
              /\
          Deontic  Pol[NEG]P
             Ø       /\
                 OpNEG   PolP'
                          /\
                      [+NEG]   vP
```

De   CP

TP

Mod₁P

WU   Mod₁'

Deontic   Pol[NEG]P

∅

OpNEG   PolP'

[+NEG]   *v*P

3.1.3 NEG+MOD*poss*+NEG

  Double negation in combination with possibility modals expresses strong deontic obliga-

tion: 'it is not possible that not p ↔ it is necessary that p: $\neg\Diamond\neg\,p$' ↔ $\Box p$'. This accounts for

both modals KE and DE: NEG+MOD poss+NEG has the reading NECESSARY[THAT. The reading

corresponds in the affirmative to the rhetorical *wh* reading of KE+NEG in (20). The combination NEG+MOD$_{poss}$+NEG is unambiguously deontic; no ambiguity between deontic necessity and circumstantial possibility similar to NEG+MOD exists and only one ModP preceding PolP is involved. *Bù* is the only negator attested in this construction. Since this construction always expresses deontic necessity, KE and DE consequently have to be interpreted as Mod$_1$; the reading by default implies positive deontic necessity, thus the polarity head is Pol[POS]. In order to receive positive polarity, the specifier position in PolP has to be filled overtly by a negative marker. NEG is merged in the specifier position of PolP in PF and cancels out the negative force of the covert NEG at LF; the PolP receives the feature [+POS], i.e., the reverse polarity of the non-overt [+NEG] Pol head. The covert negative at LF is merged in Mod$_1$P as [Spec,Mod$_1$P], in order to cancel out the negative force of the overt negator in [Spec,PolP]. Originally, the possibility modal had to move up (overtly or covertly) through PolP to the position of Mod$_1$P in order to be interpreted as necessity modal. According to the unambiguity of the deontic necessity readings of these examples, they seem to be fully grammaticalized. This implies that [NEG,MOD] and NEG are possibly directly merged in their respective positions in Mod$_1$P and in PolP. The examples in (23) represent the construction in MC (5th century CE); the examples in (24) demonstrate that it was already fully grammaticalized in the Late Archaic and very early Middle Chinese period.

(23) a. 一切福德，不可不作，   (*Taishō* 4, 202, p. 385b, MC)

    *Yīqiè   fú   dé   **bù kě bù** zuò*

    Altogether beneficial practice NEG KE NEG make

    'All the beneficial practices have to be performed.'

Paraphrase: it is NECESSARY[Pos that the practices are being perform, …

    b. 「既與人同樂，亦不得不與人同憂。」(*Shishuo xinyu* 7,21, MC)

*Jì   yǔ rén tóng   lè   yì   **bù dé bù** yǔ rén tóng*

After with man together happy also NEG DE NEG with man together

yōu

worry

'After he was happy together with others, he also has to worry together with others'

Paraphrase: it is NECESSARY[POS to worry with others.'

(24) a. 上以脩頭，下以脩足，清暖寒熱，不得不救，　(*Hán Fēi zǐ* 6/3/3, LAC)

Shàng yǐ xiū   tóu xià yǐ xiū   zú qīng nuǎn hán rè

Above CON take.care head below CON take.care foot clear warm cold hot

bù   dé   bù *jiù*

NEG DE NEG rescue

'above he takes care of the head, below he takes care of the feet, whether cool or warm,

cold or hot, he cannot not / must rescue [him]'

Paraphrase: NECESSARY[POS to rescue him, …'

   b. 范、中行數有德於齊，不可不救。　　(*Shǐjì*: 32; 1505, EMC)

*Fàn Zhōngháng shuò yǒu dé   yú Qí **bù kě bù** jiù*

Fan Zhonghang often have favour PREP Qi NEG KE NEG rescue

The Fan and Zhonghang families have often done favours to Qi, they have to (< cannot

not) be rescued

Paraphrase: it is NECESSARY[POS for them to be rescued

   c.   TP

          ⟨⟩

            T'

```
                    Mod₁P
                   /    \
                 BU     Mod₁'
                       /    \
                  Deontic   Pol[POS]P
                  KE/DE       /    \
                        OpNEG,BU   PolP'
                                  /    \
                             [+POS]    vP
                                      /__\
```
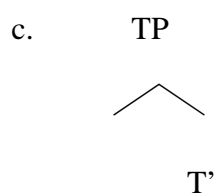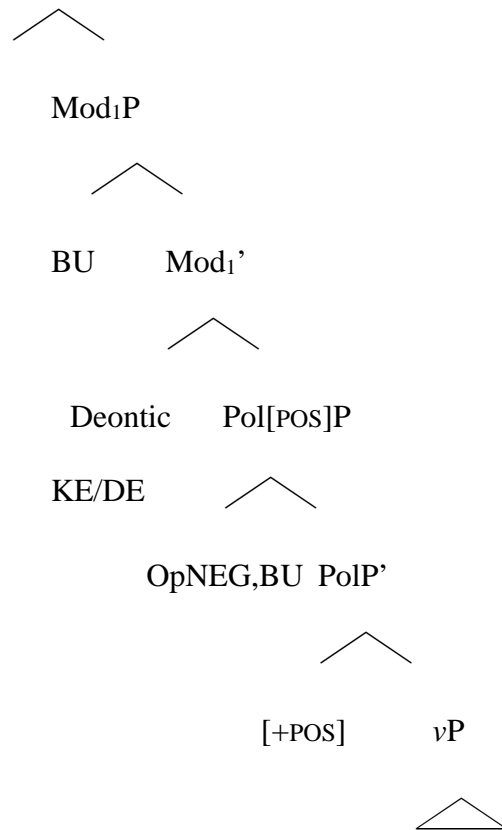
3.1.4 Summary MOD$_{poss}$+NEG

In this paragraph we provided some evidence for a syntactic distinction between circumstantial possibility and deontic necessity readings of possibility modals based on the semantic scope of negation in Late Archaic and (Early) Middle Chinese. The semantic scope of negation reveals the order expected of deontic versus circumstantial modals cross-linguistically (see e.g, Cormack and Smith 2002, Butler 2003, Tsai 2015). The expected orders would be:

a) Subject > root necessity > negation = deontic necessity

b) Subject > negation > root possibility = dynamic modality (Butler 2003).

The literal meaning of NEG+MOD$_{poss}$ 'it is not possible that p $\neg\Diamond p$' is equivalent to 'it is necessary that not p: $\Box\neg p$', in terms of necessity; logically, the deontic reading is implied. But de-

spite this logical correspondence, a deontic necessity reading (Mod₁) is not necessarily involved with NEG+MOD_poss. Both KE and DE retain a circumstantial root possibility reading (Mod₂), when NEG scopes over the auxiliary verb. Only when NEG is within the scope of the modal, the reading NECESSARY[NOT (Mod₁) can be obtained; the Pol head selected is [+NEG]. In this reading, MOD_poss is not yet fully grammaticalized as a functional head expressing deontic modality.

The reverse order MOD_poss+NEG is the literal representation of 'possible that not *p* ◊¬ *p*', which is logically equivalent to 'not necessary that *p* ¬□ *p*'. With the modal KE (KE+NEG) this corresponds to the deontic modal meaning 'may' in unmarked contexts. However, KE+NEG predominantly appears in rhetorical questions with the actual meaning RQ POSSIBLE[NOT = NECESSARY[THAT. The modals KE and DE differ in this construction: in contrast to KE+NEG, DE+NEG can also have an implicative 'manage not to' reading. This – together with the fact that DE in this reading allows a CP complement – argues against an analysis of DE as an auxiliary verb at least in this syntactic constellation.

The construction with KE including two negators, NEG+KE+NEG, is fully grammaticalized as a deontic functional category; its reading is unambiguously 'necessary that *p*': NECESSARY[POS, expressing a strong obligation. This reading is semantically similar to the outcome of a rhetorical question with KE+NEG. The construction with the modal DE, NEG+DE+NEG, is most of the times identical to NEG+KE+NEG; additionally, it can express 'capacity'. This demonstrates that is is less grammaticalized than the construction with KE.

3.2 MOD_deontic + NEG: the modal verbs DANG 當 'should', YING 應 'ought/should'

Two new deontic modals make emerge at the of the LAC and the beginning of the EMC period, the modal verb *dāng* 當 'should', and the modal verb *yīng* 應 'should, ought'; both express (weak) deontic modality (Zhu Guanming 2008, Meisterernst 2011, Wu Hsueh-ju 2014,

Xiong Jiajuan and Meisterernst 2019). Both verbs grammaticalize from lexical verbs into deontic markers. They are the first modal verbs in the history of Chinese which grammaticalize into deontic markers without requiring the polarity contexts of negation and rhetorical questions. The modal *bì* 必 (see section 3.3), which can also function as a deontic marker in LAC in non-negated contexts, displays different scope relations from *dāng* and *yīng* when negated; this had already been pointed out in Lü Shuxiang ((1942) 1974). NEG+DANG is very infrequent in the Buddhist literature (Zhu 2008), but it is regularly attested in the non-Buddhist literature, expressing negation of necessity on the basis of reason according to Lü (1974: 253). The modal YING appears regularly in combination with a negator in (E)MC. Although YING and DANG function to a great extent synonymously, they display considerable differences; DANG, for instance develops into a future marker, YING does not (Zhu 2008: 82).[25]

3.2.1 NEG + MOD_deontic

Example (25) represents negated deontic modality with DANG; the function of DANG is comparable to a typical necessity operator in English.

(25)   五陰無常不當於中住，五陰有常不當於中住， (*Taishō* 8, 221, p. 39a, EMC)

   *Wǔ   yīn   wúcháng   **bù dāng** yú   zhōng zhù*

   Five aggregate impermanence NEG DANG PREP middle stay

   *wǔ yīn   yǒucháng   **bù dāng** yú   zhōng zhù*

   five aggregate permanence NEG DANG PREP middle stay

   'the impermanence of the five aggregates should not stay in the middle, the permanence of the five aggregates should not stay in the middle

NECESSARY / SHOULD[NOT

The examples in (26) represent deontic modality with YING; they are unambiguously deontic. In (26c), YING appears in combination with the modal marker *yí* 'should' in two parallel clauses. The analysis of DANG and YING is provided in (26d). It is identical to the analysis of deontic MOD_{poss}. Since no ambiguity with regard to the reading of DANG/YING is involved, we assume that the grammaticalization from a lexical to functional category has been completed and DANG/YING are directly merged in the functional position of Mod₁P. Due to its scope, NEG in this derivation is merged in [Spec,PolP] at LF. Since DANG and YING are defective verbal heads, NEG has to precede them, spelled out in [Spec,Mod₁] at PF.

(26) a. 王告之言：『象若不調，不應令吾乘之； (*Taishō* 4, 202, p. 372c, MC)

Wánggào zhī yán xiàng   ruò bù tiáo **bù yīng**   *líng   wú chéng zhī*

King tell OBJ say elephant if   NEG tame NEG YING make me ride   OBJ

'The king told him: "If the elephant is not tamed, you should not make me ride it."

NECESSARY / SHOULD[NOT

b. 又人子禮，不應竭用父母庫藏令其盡也。 (*Taishō* 4, 202, p. 411b, MC)

*Yòu   rén zǐ lǐ   **bù yīng** jié   yòng fù   mǔ*

Again man son propriety NEG YING exhaust use   father mother

kùzàng   líng qí jǐn   yě

treasure.house make GEN exhaust SFP

'Furthermore, according to the proper behaviour for a son, he should not completely use up his parents' treasure house and cause it to be used up completely'

NECESSARY / SHOULD[NOT

c.「夫太子法，不應妄語，已許價決，不宜中悔。」

(*Taishō* 4, 202, p. 419c, *Xianyujing*)

Fútàizǐfǎ **bù yīng** *wàng   yǔ   yǐ   xǔ   jià   jué*   **bù yí**

49

PT heir law NEG YING frivolous   speech   already agree price   decide NEG YI

zhōng   huǐ

middle regret

'"According to the laws for an heir one should not speak frivolously, you already

agreed to the terms of the price, you should not regret it right in the middle.'

NECESSARY / SHOULD[NOT

d.　　　TP

　　　　　　T'

　　　　　　　　Mod₁P

　　　　　　　　　BU　　Mod₁'

　　　　　　　　　　　Deontic　　Pol[NEG]P

　　　　　　　　　　　　YING

　　　　　　　　　　　　　　OpNEG　　PolP'

　　　　　　　　　　　　　　　　[+NEG]　　*v*P
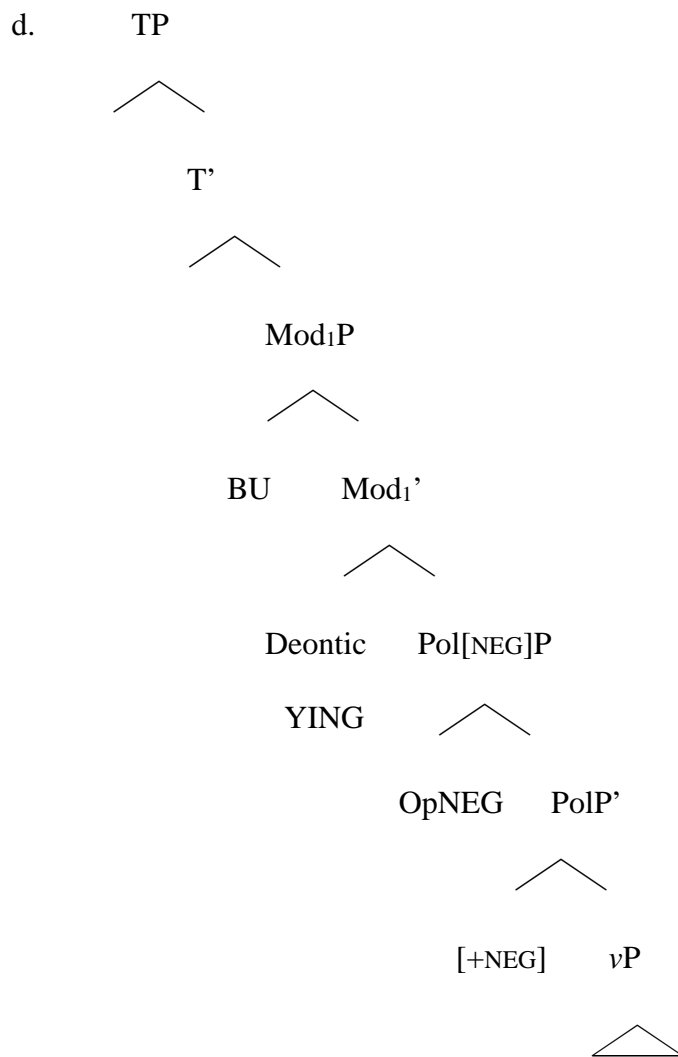
3.2 NEG+MOD_{deontic}+NEG

Double negation with deontic modals is also possible. NEG+MOD_{deon}+NEG has the same read-

ing as double negation with possibility modals: 'not should not *p*' ↔ 'should *p*'; it is identical

to 'necessary that p' derived from 'not possible not p': $\neg\Diamond\neg p$' $\leftrightarrow$ $\Box p$'. An interpretation NOT

NECESSARY NOT is not appropriate. This argues for an analysis of the construction as involving true double negation similar to the English example in (14a), for convenience repeated as (27b). In the example in (27c) double negation contrasts with simply negation in two parallel clauses; the analysis of YING with double negation is in (27d); it is identical to the analysis of double negation with MOD$_{poss}$.

(27) a. 今得用施，不應不與。 (*Taishō* 4, 202, p. 392b, MC)

     *Jīn   dé yòng shī   **bù yīng bù yǔ***

     Now can use   distribute NEG YING NEG give

     'Now they can be used and distributed and they should be given.'

Paraphrase: SHOULD NOT NOT be given = SHOULD[POS

     b. Mary will *not not* show up $\leftrightarrow$ Mary will show up.

     c. 從其聞者。不應不信。亦不應毀。 (*Taishō* 1, 1, p. 17c, MC)

     *Cóng qí wén zhě **bù yīng bù xìn**   yì **bù yīng**   huǐ*

     Follow GEN hear NOM NEG YING NEG believe also NEG YING destroy

     'Following what he heard, he should believe it, and he also should not destroy it.'

Paraphrase: you SHOULD NOT NOT believe, and it is necessary not to destroy it.

SHOULD[POS contrasting to SHOULD[NOT

     d.   TP

              /\\

                T'

                 /\\

                 Mod$_1$P

```
        BU      Mod₁'

          Deontic    Pol[POS]P
          YING
                OpNEG,BU    PolP'

                      [+POS]    vP
```
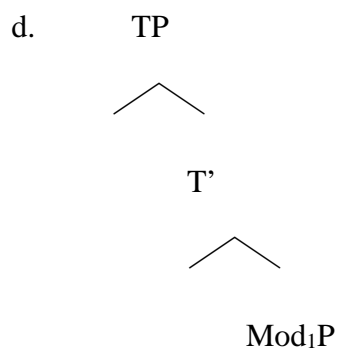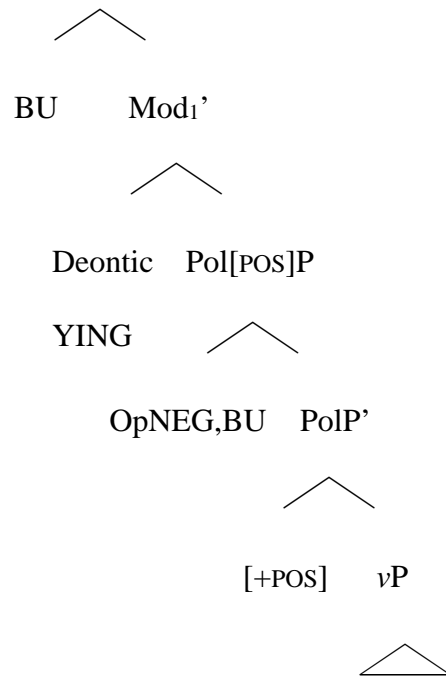
3.2.3 Summary: MOD_{deontic}+NEG

Both modals DANG and YING express deontic modality in combination with negation: SHOULD[NOT; they are necessity operators having scope over negation 'necessary that not p $\Box\neg\, p$'. However, they do not require the polarity context of negation or rhetorical questions in order to express deontic modality. This can be seen in the examples in (28a) and (28b), which express deontic SHOULD without negation. Additionally, modal DANG further grammatical-izes into a future marker and into an epistemic marker (Meisterernst 2011, Wu 2014, Xiong & Meisterernst 2019). The future meaning is exemplified in (28c) and the development into an epistemic marker is exemplified in (28d). These examples show that DANG continues to grammaticalize in an upward movement on the functional spine as predicted in Roberts and Roussou (2002, 2003), based on the hierarchy of functional categories established in Cinque (1999) in (28e).

(28) a. 舍利弗！汝等當一心信解受持佛語。 (*Taishō* 9, 262, p. 7c, cf. Xiong &

Meisterernst 2019: 198)

Shèlìfú rǔ   děng   dāng   yīxīn   xìnjiě   shòuchí   fó   yǔ

Shelifu You PL   DANG one-heart   trust   hold.on   Buddha   speech

'Shelifu! You should whole-heartedly trust and hold on to the Buddha's words.'

Paraphase: you SHOULD[POS …

b. 於十方諸大菩薩，常應深心恭敬禮拜。 (*Taishō* 9, 262, p. 38b, cf. Xiong & Meis-

terernst 2019: 199)

yú   shí   fāng   zhū   dà   púsà   cháng   yīng   shēn   xīn   gōngjìnglǐbài

PREP ten   direction PL   great   bodhisattva   always   YING   deep   heart   worship respect

'Towards the great bodhisattvas of the ten directions, one should always show wor-

ship and respect with a deep heart.'

Paraphrase: one SHOULD[POS …

c. 我所說經典無量千萬億，已說、今說、**當說**，而於其中

wǒsuǒ   shuō   jīng   diǎn   wú   liàng

I   REL   tell   classic   scripture not-have measure

qiān   wàn   yì   yǐ   shuō

thousand   ten-thousand hundred.thousand   already tell

jīn   shuō   dāng   shuō   ér   yú   qí   zhōng

now tell   DANG   tell   CON at   its   middle

'Of all the immeasurable thousands, ten-thousands, hundred thousands of sūtras I

have recited, which have already been recited, are recited now, and **will be recited**,

among all these, …' (Taisho, 9, 262, 31b, 5th c. CE)

d. 「汝聞此比丘尼所說不？」答言：「聞！唯世尊**當**知之。」 (*Sifen lü*, *taishō* 22, 1468, 588a, cf. Xiong & Meisterernst 2019: 217)

rǔ wén cǐ bǐqiūní suǒ shuōfǒu?

You hear this Bhikkhuni REL speak.interrogation

dá yán wén wéi shìzūn dāng zhī zhī

answer say hear only Buddha must know it

'"Do you hear what the bhikkuni said?" The reply goes: "Yes. Bhante, you must have known that."'

e. Mod$_{epistemic}$ T(Past) T(Future) Mood$_{irrealis}$ Mod$_{necessity}$ Mod$_{possibility}$ … Mod$_{root}$[26] (cf. Roberts and Roussou 2002)

YING becomes the most dominant necessity marker in the early Buddhist literature and takes over the functions of both the (not discussed) premodal *yí* 宜 and of DANG. The reason for this may be that DANG can have different functions and is more ambiguous than YING. Double negation with YING expresses deontic obligation SHOULD NOT NOT = SHOULD[POS.

3.3 NEG+MOD$_{necessity}$: BI 必 'necessary, must' and XU 須 'need'

In the last section of the discussion, the necessity modals *bì* 必 and *xū* 須 are discussed briefly. They are categorized as expressing objective necessity (Lü 1974: 252). In combination with NEG, they express negated necessity NOT[NECESSARY, i.e. their semantics differ from the deontic markers discussed in the preceding section. Without a negator, they express deontic necessity, in combination with negation they express anankastic exemption 'it is not necessary that *p*' which is logically identical to 'it is possible that not : ¬□p ↔ ◊¬p' (Carlotta Sparvoli 2015 ms.). The reading is NOT[NECESSARY ⇒ POSSIBLE NOT. These modals seem to

be the only markers, which express anankastic exemption in the negative on a regular basis. According to the scope of negation they belong to the group of Mod$_2$, generated in the lexical layer comparable to English NEED; the only necessity modal "falling under Modal$_2$ is *need* (without *to*)" (Cormack and Smith 2002: 139).

BI as a modal verb expressing necessity is not very frequent in LAC and (E)MC. Example (29) represents this employment in combination with NEG in MC. Most frequently BI is employed as an epistemic adverb in LAC and (E)MC as in example (30). In this function it always precedes negation; *bì* scopes over the entire proposition including the negator. The speaker conveys their commitment to the certainty of the utterance. This could be paraphrased 'according to the speaker's commitment it certainly is the case that…'. *Bì* is generated in the CP layer, which typically hosts epistemic modal markers, always preceding tense and aspect. A derivation of adverbial (epistemic) *bì* in combination with modal negation has been shown in (7e).

(29) 『我不必樂，祖父已來，以此為業，若捨此事，無以自濟。』

(*Taishō* 4, 202, p. 410c, MC*)*

*Wǒ **bù** **bì** lè   zǔfù   yǐ   lái   yǐ cǐ   wéi   shì*

I   NEG BI happy grandfather already come YI this make work

ruò shě   cǐ   shì wú   yǐ zì   jì

if   abandon this duty not.have YI self support

'I need not be happy [about it], but since our grandfathers this has been made our work; if we abandon this duty, we cannot support ourselves.'

NOT[NECESSARY / NEED ⇒ 'it is possible not to be happy about it'

(30) 若於身上剡千燈者，必不全濟， (*Taishō* 4, 202, p. 349c, MC)

*Ruò yù   shēn shàng wān   qiān   dēng zhě **bì**   bù*

If   PREP body above scoop.up thousand lantern NOM BI_epistemic NEG

Quán   jì

completely complete

'If one scoops up a thousand lanterns on the body, it can certainly not be achieved completely.'

Xù 需 grammaticalizes from a lexical verb 'wait for' to a modal auxiliary verb 'must, need'. In (31a) it appears as a transitive lexical verb, and in (31b) with a CP complement; the subject is not raised, but remains in the complement clause. In (31c) XU has a VP complement, the subject precedes the modal. It expresses exemption, 'need not' = NOT[NECESSARY. In (31d), we propose a derivation of (31c); the derivation for the modals BI and XU is identical to the derivation of circumstantial possibility modals, i.e. BI and XU are analyzed as Mod$_2$.

(31) a. 『我不須汝，亦不須象。』   (*Taishō* 4, 202, p. 372b, MC*)

   *Wǒ **bù** **xū** rǔ   yì   bù xū   xiàng*

   I   NEG XU you also NEG XU elephant

   'I don't need you, I also don't need the elephant.'

   b. 「止，善男子！不須汝等護持此經。   (*Taishō* 9, 262, p. 39c, MC)

   *Zhǐ   shàn nánzǐ **bù xū** rǔ   děng hùchí   cǐ   jīng*

   Stop good men   NEG XU you PL   maintain this sutra

   'Stop, good men! It is not necessary that you maintain this sutra.'

   c. 『汝不須言，汝夫狀貌，正似株杌，   (*Taishō* 4, 202, p. 364c, MC)

   *Rǔ **bù** **xū** yán rǔ   fū   zhuàngmào zhéng sī   zhūwù*

   You NEG XU talk you husband appearance really resemble   stump

56

'You need not talk about it, the appearance of your husband really resembles a stump, …'

Anankastic: NOT[NEED / NECESSARY = 'possible that not *p*'

d. *v*P

```
        v'
        
      Mod₂P
      
   BU    Mod₂'
   
      dynamic   vP / VP
      BI/XU
```

d. *v*P
— *v*'
—— Mod$_2$P
——— BU Mod$_2$'
———— dynamic *v*P / VP
———— BI/XU
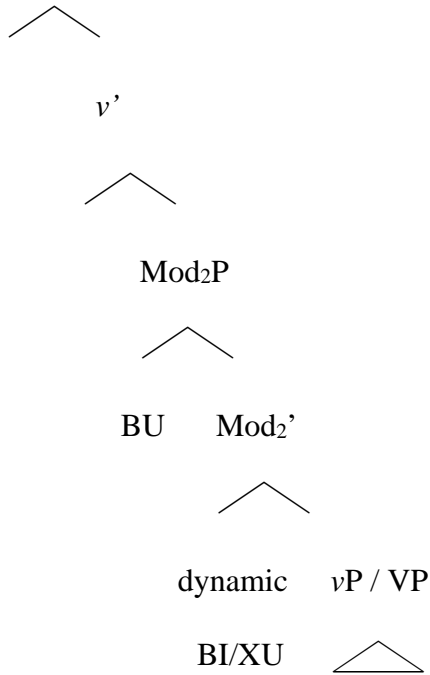
4. Conclusion

In this discussion, we proposed a division of modal verbs in LAC and (E)MC into Modal$_1$, deontic necessity modals, and Modal$_2$, circumstantial possibility modals, modifying Cormack and Smith's (2002) proposal. Following Cormack and Smith (2002), the **semantic** scope of negation with regard to the modal operators POSSIBILITY and NECESSITY has been employed to test the proposal.

(31) C > T > Modal$_1$: NEG+MOD$_{poss}$ (KE/DE), MOD$_{poss}$ (KE)+NEG, NEG+MOD-$_{poss}$(KE/DE)+NEG, (NEG+)MOD$_{deont}$ (DANG/YING), NEG+MOD$_{deont}$ (YING)(+NEG)

> Pol[NEG/POS] > *v*P > Modal$_2$: (NEG+)KE, (NEG+)DE, BI, XU

The regular position of the negator is always preverbal in Chinese, and at least the negator *bù* does not have its own projection. If the verbal head is defective, i.e. a copula, or a modal or aspectual head, the negator has to attach to it directly, presumably in [Spec,V_{mod}P]; the PF realization of the modal auxiliary verb can differ from its interpretation at LF. In order to account for the different modal readings of MOD$_{poss}$, a polarity[NEG/POS] phrase has been proposed, which hosts negation at LF either covertly [+NEG], or overtly [+POS]. Since Chinese is a double negation language, positive polarity is induced by an overt NEG in [Spec,PolP] in addition to the covert [NEG], i.e., the LF copy of NEG in [Spec,Mod$_1$P] at PF. This results into the strong necessity reading of NEG+MOD$_{poss}$+NEG (with KE and DE) 'it is not possible that not p ↔ it is necessary that p'. Since the combination NEG+MOD$_{poss}$ allows two different modal readings, a circumstantial one hosted in Mod$_2$, and a deontic one hosted in Mod$_1$, we proposed that the grammaticalization of a MOD$_{poss}$ from Mod$_2$ in the lexical layer into a functional category outside *v*P is not complete yet. The deontic reading requires movement of the modal to Mod$_1$P through the functional projection PolP, where it is reanalysed as a deontic marker; the covert NEG of PolP is merged in [Spec,Mod$_1$P]. This is different for NEG+KE+NEG. Therefore, we propose that the grammaticalization process of this combination is complete and that the modal together with the two negative markers is merged directly in TP. Accordingly, the possibility modals KE and DE in combination with negation demonstrate how lexical (modal) verbs, hosted in the lexical layer, grammaticalize into modal auxiliaries and functional categories in the TP-layer by an upward movement from the lexical to a functional category in the sense of Roberts and Rousseau (2002, 2003).

The unambiguous deontic readings of the weak deontic modals DANG and YING argue for their grammaticalization into heads of Mod$_1$P; additional syntactic evidence for their position in TP has been discussed in Xiong & Meisterernst (2019). The path of grammaticalization

follows the hierarchy of functional projections established in Cinque (1999) and employed in Roberts and Roussou (2003) as syntactic evidence for grammaticalization as a change from a lexical to a functional category. The development of the Chinese modals provides evidence for universal paths of grammaticalization as syntactic change from a projection in the lexical layer to a functional category in the CP layer. All modal auxiliaries follow this path of grammaticalization from lexical (premodal) verbs to modal auxiliaries of different functions. The extension of the system of modal markers in Chinese was probably caused by a general change in the parameters of Chinese from a more synthetic to a more analytic language;[27] this triggered the emergence of a number of analytic constructions. These include an increase of analytic deontic negation, i.e. NEG+MOD, in contrast to the synthetic modal negators of Archaic Chinese. These negators lose their transparency as modal markers from LAC to MC. All negative markers were subject to this process of analyticization, but it started first with the modal negative markers. Since possibility modals were ambiguous and their modal readings were difficult to distinguish syntactically, new modal markers emerged which made it easier for the language learner to be identified as deontic modal markers.

Additionally, the investigation of the scope of negation demonstrates that not all necessity markers are realized as Mod_1; this leads to a distinction between deontic and anankastic modality. A similar distinction has been proposed in the traditional Chinese linguistic literature (Lü (1974), see also Sparvoli 2019):

a) Deontic prohibition in the reading '$\Box \neg p \leftrightarrow \neg \Diamond p$', 'must, have to, should', is expressed by

   BUKE(BU), BUDE(BU), DANG, and YING, they all belong to the category of $Modal_1$

   $\Rightarrow$ NECESSARY[NOT(POS).

b) Deontic excemption (anankastic modality) $\neg\square p \leftrightarrow \Diamond\neg p$', 'need not, not necessary', is ex-

pressed by BI and by XU; similar to English 'need' they belong to the category of Modal_2

(NOT)[NECESSARY.

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[1] We follow the periodization of Chinese proposed in Alain Peyraube (1996), but I include his 'Pre-Medieval period' into the Middle Chinese period, relabelling it Early Middle Chinese. The reason for this is that the development of numerous innovations in the syntax of Chinese can be traced back to this period.

[2] This has already been proposed for Classical Chinese by Liu (2000:94).

[3] This implies that the order POSSIBLE[NOT?' in a rhetorical question has the actual reading of 'NECESSARY[THAT and not the reading 'NECESSARY[NOT. This indicates that the change of the reading of *kě* is triggered by a different polarity head; this is discussed in section 3.1.2.

[4] The reconstruction of Old Chinese is taken from Baxter and Sagart (2014).

[5] Wei Pei-chuan (2004) is the most comprehensive discussion of this issue. Wei provides a number of arguments against Djamouri's and in favour of the predominant position that *wù* is a fusion of an *m*-negative marker and the object pronoun *zhī* 之 of LAC (see also Edwin G. Pulleyblank 1995).

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[6] This has been pointed out by an anonymous reviewer, who drew our attention to the emendation of this instance in Hu Houxuan (1999).

[7] As already mentioned, our analysis of the negative modal does not adopt the fusion hypothesis.

[8] *Bì* in this example functions as an epistemic adverb. Following Cinque's (1999) hierarchy, epistemic adverbs precede deontic modal markers, tense and aspect markers. They take the entire proposition in their scope and convey the commitment of the speaker to the truth of the utterance. *Bì* in this function is different from the modal verb *bì* discussed below; it always scopes over negation.

[9] There is also quite a substantial discussion on negative markers in other Modern Sinitic languages, particularly in Taiwanese Southern Min.

[10] The reconstruction of the verbal head of VP/NegP is based on Baxter and Sagart (2014) and on Axel Schuessler (2007). The reconstructed basis for the verbal head of *wèi* is the LAC aspectual adverb *jì* 既 which has supposedly grammaticalized from a verb 'complete'. The exact phonological derivation of *m* + [k]ə[t]s to *wèi* still has to be figured out. Since the initial [k] of *kət-s appears in brackets, Baxter and Sagart do not seem entirely certain about the exact phonetic realization of the initial. The assimilation of a nasal + uvular consonant in Old Chinese into an initial *w-* in Modern Mandarin is occasionally attested, but the respective Old Chinese initials are reconstructed from a Middle Chinese velar nasal *ŋ-* and not from *m-*. A more likely scenario for the loss of *k- from *m-[k][ə]t-s, resulting in the initial *m-,* seems to be that the initial of the verbal head *k-* had been dropped. The dropping of the initial of the verbal head seems to be a common feature when it comes to the fusion of negative markers in Chinese. The morpheme *m-* was one of the two bilabial initials *m-* and *p-* in Old Chinese and Middle Chinese which marked negation when prefixed to verbal heads.

[11] For an analysis of aspectual adverbs as specifiers of the Outer Aspect Phrase in LAC and EMC see Meisterernst (2016).

[12] For a comprehensive discussion of the literature on negation in Modern Chinese see Zhuang Huibin (2015) and references therein.

[13] The following categories are attested between *bù* and V in the *Zuozhuan*: the mutual and reflexive pronominal elements *xiāng* 相 / *zì* 自 V, the applicative head *yǐ* 以, a PP with *yú* 于; pronominal objects; a focalized object in the copula construction 唯 NP$_{Obj}$ 是 V; aktionsart adverbs, manner adverbs.

[14] *Wú* 無 can also write the modal negative *wú* 毋, which would require a different analysis. Accordingly, double negation with *wú* 無 requires a separate study.