

博士論文

On the Syntax of Modal Verbs in Mandarin Chinese
(中国語法助動詞の構文について)

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Abstract

This dissertation centers on the syntactic natures of modal verbs in Mandarin Chinese. I will argue the traditional classification for modal verbs, i.e., Epistemic-Deontic-Dynamic trichotomy is unable to cover the asymmetric properties observed in each subgroup of modal verbs. To remedy, I propose such asymmetry can be derived from the contrast of Polysemantic modal verbs vs. Monosemic modal verbs. Polysemantic modal verbs must enter into an Agree relation with Tense head to specify its meaning, whereas such constraint is not imposed on monosemic modal verbs. This leads to a predication that polysemantic modal verbs are subject to the freezing effect, thus they can no longer undergo categorial movement towards clausal periphery. Oppositely, monosemic modal verbs do not suffer from the mandatory Agree-relation requirement, hence they can be found as high as in CP domain. If on track, the peculiar asymmetry between, say, *keneng* ‘may’ and *yinggai* ‘may’ that only the former can precede the subject can be properly accounted for, because *keneng*, in contrast to *yinggai*, can only express epistemic modality while *yinggai* can also be interpreted as a deontic modal verb meaning ‘be obligatory to’. Consequently, a polysemantic modal verb like *yinggai* would end up in a criterial position since the {uModal} feature it bears gets valued through the Probe-Goal relation with T. Therefore, no further movement is possible.

By assuming the Polysemantic/Monosemic distinction, apart from the issue of pre-subject occurrences mentioned above, several additional phenomena concerning the asymmetrical properties can be neatly sorted out without stating language-specific principles.

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List of Abbreviations

ACC: accusative

C: complementizer

COP: copula,

DAT: dative

Dy: dynamic

DE: de (possessive particle)

EMV: epistemic modal verb

FOC: focus

MOD: modal

PASS: passive voice

PL: plural

Q: question particle

SFP: sentence-final particle

TOP: topic

ASP: aspect

CL: classifier

D: deontic

DMV: deontic modal verb

DyMV: dynamic modal verb

E: epistemic

EXC: execration

GEN: genitive

NOM: nominative

PAST: past tense

PRES: present tense

RMV: root modal verb

SG: singular

1. Introduction

1.1 About Chinese Modal Verbs

Mandarin Chinese is well-known to be an analytic language, which means that it does not show overt parametrized inflection and morphological agreement. Instead, the temporal information and grammatical relations are manifested through the attachment of affixes/insertion of temporal adverbs and word order, respectively. Modal verbs in Chinese, however, seem to parallel the modal verbs (auxiliaries) of languages like English in the following essential respects: They all (i) are independent lexical entries; (ii) precede main verbs; (iii) are associated with non-finiteness; and are (iv) marked as irrealis (see Mithun 1999 for realis and irrealis). Note here that I do not claim that modal verbs like *yuanyi* ‘wish’ in Chinese have identical properties or behaviors to modal verbs like *wish* in English does (cf. Chao 1968). On the contrary, I will return to this matter in 2.5 and demonstrate that the so-called parallelism is merely apparent.

In this dissertation, I will examine the syntax of modal verbs in Chinese. Before embarking, it is necessary to give a brief sketch of the members of the set traditionally classified as modal verbs. Given their obvious idiosyncrasies, many researchers have noticed that there is a group of verbal elements in Chinese that should be distinguished from the category of verb, and they are termed *nengyuan dongci* ‘ability-volition verbs’. For example, Chao (1968: 365) points out that modal auxiliaries in Mandarin Chinese take verbs as complements and cannot be affixed with the aspect marker *le*. In Liu et al. (2001), the so-called *ability-volition verbs* are defined as “a closed category with limited members, while shows distinct grammatical properties from ordinary verbs.” Under their framework, modals verbs can be further divided into six subgroups:

(1) a. *Volition*

要, 想, 愿意, 肯, 敢

yao ‘want, will’, *xiang* ‘want’, *yuanyi* ‘wish’, *ken* ‘be willing to’, *gan* ‘dare’

b. *Judgement of propositions*

应该, 应当, 得

yinggai ‘may, be possible’, *yingdang* ‘may, be possible’, *dei* ‘may, be possible’

c. *Judgement of conditions*

能, 能够, 可以

neng ‘can, may’, *nenggou* ‘can, may’, *keyi* ‘can, may’

d. *Permission*

能, 可以, 许

neng ‘can, may’, *keyi* ‘can, may’, *xu* ‘can, may’

e. *Assessment*

配, 值得

pei ‘deserve, be worthy of’, *zhide* ‘be worthy of’

f. *Possibility*

可能, 会, 要, 能

keneng ‘might, may’, *hui* ‘will, may’, *yao* ‘will, may’, *neng* ‘might, may’

Hsu (2008) posits a trichotomy that is claimed to be able to capture the interpretive natures of each modal. In her work, Chinese modals are divided into three subgroups in terms of the epistemic, deontic, and dynamic modalities (deontic and dynamic modals are also termed Root Modals in Brennan 1993 and Event modals in Palmer 2001):

(2) a. *Epistemic modals*

Definition: modal verbs that express the speakers’ judgement about the factual status of the proposition.

Members: 可能, 应该, 可以, 能

keneng ‘be possible’, *yinggai* ‘be possible’, *keyi* ‘be possible’, *neng* ‘be possible’

b. *Deontic modals*

Definition: modal verbs that denote permission or obligation externally given to the subject.

Members: 应该, 可以, 能, 得, 必须

yinggai ‘ought to’, *keyi* ‘permitted to’, *neng* ‘permitted to’, *dei* ‘ought to’,
bixu ‘obligated to’

c. *Dynamic modals*

Definition: modal verbs that denote ability or willingness internally possessed by the subject.

Members: 能, 会, 可以, 要, 肯, 敢

neng ‘be able to’, *hui* ‘be able to’, *keyi* ‘be able to’, *yao* ‘want to’, *ken* ‘be willing to’,
gan ‘dare’

I assume each list given above exhibits different aspects of the whole picture, and they are basically unproblematic. However, it is noticeable that there are two members that do not seem to be “core members” of the modal verbs, since they are at odds with certain syntactic properties that modals usually have according to Liu et al. (2001). First, most modal verbs are compatible with the A-not-A configuration, as exemplified in (3a), except for *dei*, as in (3b). Second, *xu* takes an entire clause, in which the syntactic object is indispensable, as complement, as shown in (4b-c), whereas most modal verbs are only allowed to take verbal phrase as complement, as illustrated in (4a).

(3) a. 你能不能/应不应该/可不可以…

Ni neng-bu-neng/yingbu-yinggai/ke-bu-keyi…

you can-not-can/should-not-should/may-not-may…

b. 你得不得当上教授。

*Ni dei-bu-dei dangshang jiaoshou.

you should-not-should become professor

‘Should you become a professor (or not)?’

(4) a. 涛涛能/会/应该/可以走路了。

Taotao neng/hui/yinggai/keyi zoulu le.

Taotao can/can/should/can walk ASP

‘Taotao can/should walk now.’

b. 涛涛许你去看电影。

Taotao xu [ni qu kan dianying].

Taotao permit you go see movie

‘Taotao allows you to see a movie.’

c. 涛涛许去看电影。

*Taotao xu qu kan dianying.

Taotao permit go see movie

‘Taotao allows (you) to see a movie.’

Hence, in the present paper, *de* and *xu* will be excluded from discussion since they show unique traits that other modal verbs lack. The subsequent discussion of modal verbs will be unfolded based on the list of modals given in Hsu (2008); however, it seems that her classification needs certain refinements, as I will unfold it in 3.2 and 3.3.

Now observe that modals in Chinese inclusively precede main verbs and take them as complements, as illustrated in (3a) and (4a), which are much like their counterparts in English. Root modals in Chinese must take an infinitival VP¹ as complement as well, which again

¹ Whether Mandarin Chinese has a contrast of finite/nonfinite remains controversial in literature. For the purpose of presentation, and as it will be discussed in Chapter 3, I will assume the contrast in this dissertation.

indicates that Chinese modal verbs in fact constitute an independent category.²

- (5) a. 他可以离婚了。
Ta keyi li-hun le.
he may^D divorce ASP
'He can get divorced now.'

² One may argue that the complement of raising verbs such as *kaishi* 'start' and *tingzhi* 'stop' is also restricted to non-finite VP, in which case this property is not unique to modals (cf. Li 1990: 123, Tsao 1996: 175-176).

- (i) Zhangsan kaishi [chiyao] le
Zhangsan start eat-medicine ASP
'Zhangsan starts to take medicine.'
- (ii) *Zhangsan kaishi [chi-le yao]
Zhangsan start eat-ASP medicine

First, arguing for the independent status of modals does not necessarily mean that they are not allowed to share certain properties with other elements. Second, raising verbs are different from modals in many ways. For instance, raising verbs can either precede or follow manner adverbs, while modals must precede them; see (7).

- (iii) Zhangsan xiaoxinyiyi-de tingzhi xingdong.
Zhangsan carefully stop action
'Zhangsan stops the action carefully.'
- (iv) Zhangsan tingzhi xiaoxinyiyi-de xingdong
Zhangsan stop carefully action
'Zhangsan stops acting carefully'

Therefore, despite cooccurring with non-finite VPs, raising verbs and modals do not fall into the same category.

- b. 他可以离了婚。
 *Ta keyi li-le-hun.
 he may^D divorce-ASP
 ‘He may have got divorced.’
- c. 他离了婚。
 Ta li-le-hun.
 he divorce-ASP
 ‘He may have got divorced.’

As to the ungrammaticality of (5b), as will be discussed in 2.2, I follow the proposal of Tsai (2015: 19) that the appearance of the modal verb *keyi* would block the Asp-to-T raising (see Wu 2002), which is argued to be responsible for the fusion of the verbal host and the aspect marker. As shown by (5c), the disappearance of *keyi* leads to the correct expression.

Furthermore, aspect markers like *-le*, *-guo*, and *-zhe* that are supposed to be affixed to main verbs can never be affixed to the modal verbs listed in (1) and (2).

- (6) a. 小张喝了/过/着酒。
 Xiaozhang he-le/guo/zhe jiu.
 Xiaozhang drink-ASP/EXP/PROG wine
 ‘Xiaozhang has drunk/used to drink/is drinking wine.’
- b. 小张能喝了/过/着酒。
 *Xiaozhang neng-le/guo/zhe hejiu.
 Xiaozhang can-ASP/EXP/PROG drink-wine

Finally, following Travis’ (1988) analysis of the hierarchy of adjuncts, Tang (2001) argues that the rigid sequence of Chinese adverbs can serve as a series of benchmarks denoting clausal hierarchy. Manner adverbs, for instance, must precede main verbs, whereas modals must precede manner adverbs.

- (7) a. 贼小心翼翼地(能)开锁。
 Zei xiaoxinyiyi-de (*neng) kaisuo.
 thief carefully can unlock
 ‘The thief unlocks the lock carefully.’
- b. 贼能小心翼翼地开锁。
 Zei neng xiaoxinyiyi-de kaisuo.
 thief can carefully unlock
 ‘The thief can unlock the lock carefully.’

If manner adverbs are presumed to be adjuncts to *vP*, modals must then be merged to a position higher than *vP* to meet the rigid sequence restriction mentioned above. I will postpone discussion of the location of modals and their phrasal configuration in Chapter 2; what we must bear in mind here is that Chinese modals do play distinct roles from main verbs.

Note that Lin and Tang (1995) propose that modals in Chinese should be analyzed as verbs for the following reasons: (i) So-called modals can surface at the end of a sentence, indicating they are located in a hierarchically low position, as in (8a); and (ii) modals in Chinese can be negated by *bu*, as shown in (8b), which is typically used to negate a verbal phrase.

- (8) a. 你那样做不应该。
 Ni nayang zuo bu yinggai.
 you like-that do not should
 ‘You shouldn’t do like that.’
- b. 我这样做可不可以?
 Wo zheyang zuo ke-bu-keyi?
 I like-that do can-not-can
 ‘Can I do like that?’

Their rationale, however, may face difficulties if we take a closer look at the lexical selections. To begin with, of all the items in (1) and (2), not all the modal verbs can take the ending slot, as illustrated in (9). The scrambling phenomenon in question seems to lack universal applicability.

- (9) a. 老王去警察局不敢。
 *Laowang qu jingchaju bu gan
 Laowang go precinct not dare
 ‘Laowang dares not to go to the precinct.’
- b. 老王去警察局要不要？
 *Laowang qu jingchaju yao-bu-yao?
 Laowang go precinct will-not-will
 ‘Will Laowang go to the precinct or not?’

Bu, said to be a negator that solely negates verbs by Lin and Tang (1995), seems to be more versatile with respect to the range of negation. As depicted in (10), it is clear that *bu* applies also to nouns and adverbs.

- (10) a. 不男不女。
 Bu nan bu nv.
 not male not female
 ‘Being neither male nor female.’
- b. 不慢慢地练习，就不会熟练。
 Bu manman-de lianxi, jiu bu hui shulian.
 not slowly practice then not will proficient
 ‘If (you) don’t practice slowly, you will not get proficient.’

Besides the narrow range of application, the modal-scrambling clauses are limited to the

interrogatives and negatives, meaning indicatives do not get licensed (epistemic modals can appear at the end of clause, to which I will return in 3.2).

(11) 犯罪被阻止应该。

*fanzui bei zuzhi yinggai.

crime PASS stop should

Intended reading: ‘The crime should be stopped.’

Now, what remains unsolved is that why the atypical sentences in (8) can be well-formed. In 2.1, we shall see that by postulating the Split-T Hypothesis, this can be accounted for.

1.2 Methodology and theoretical framework

The enterprise of generative grammar has been significantly reformulated since Chomsky’s (1995) Minimalist Program (MP). With the understanding that the previous Government-Binding Theory (GB) is “roughly correct,” MP is assigned the task of showing “whether it can do better than what GB can, both empirically and conceptionally.” Thus, the MP-approach is supposed to solve particular problems only with a non-redundant and optimal system. Put metaphorically, within GB one can build whatever one wants to eliminate problematic outcomes, whereas only unproblematic objects are allowed to be built from a MP perspective.

To concretize the spirit of minimalism, let us rethink the four levels of representation. According to Chomsky (1981), thematic relations would coincide with their grammatical functions in D-structure (DS); in other words, the subject of DS is arguably the logical subject and the object of DS is the logical object. Hence, all the θ -roles must be properly assigned/discharged at DS.

Consider the sentence in (12), for example.

(12) DS:

[\emptyset seems [Eric to hate eels]]

Hate is a transitive verb, and naturally has two θ -roles to assign, namely ‘hater’ and ‘hatee’. Under the logical relation presented in (12), *Eric* and *eels* will be specified as ‘hater’ and ‘hatee’, respectively. Meanwhile, as the matrix verb *seems* is not associated with *Eric* or *eels* directly, it does not have a logical subject at DS.

After the DS in (12) is constructed, in order to achieve the correct output, the derivation must proceed and enter the next level of presentation, i.e., S-structure (SS), where the derivation is assumed to reach the interface levels. GB requires Cases to be assigned at SS, as well as a number of grammatical modules will be activated (ECP and Subjacency, for instance, are the conditions available at SS).^{3,4} The SS of the derivation (12) would be generated as follows:

(13) SS:

[Eric_i seems [_i to hate eels]]

The standard GB approach requires every DP to be Case-assigned. In the case of (13), as *to* is stipulated to be unable to assign Case, *Eric* must be raised to the matrix domain to get nominative case from the INFL(ection) head. As soon as the structure in (13) is formed, the derivation will be delivered to LF (logical form) and PF (phonetic form), at which point it receives phonetic and semantic interpretations.

However, unlike LF and PF, which are grammatical inputs to the Conceptual-Intentional System and Articulatory-Perceptual System, and thus theoretically indispensable, DS and SS are theory-internal levels motivated on empirical grounds. That is, if the empirical merits of adopting DS and SS can be obtained without them, such a motivation would

³ Huang (1982) proposes that wh-movement of Chinese is executed after SS, versus before SS in English.

⁴ Nishigauchi (1986) argues that subjacency can be applied to LF as well.

disappear. To instantiate this argument, I show what we would lose if we abandoned DS.

For a long time, the difference between control and raising constructions has been attributed to distinct DS structures (see also Postal 1974, Hornstein 1998, Bošković 2002b).

- (14) DS for Control structure:
[Eric_i hoped [PRO_i to go south]]
- (15) DS for Raising structure:
[∅ seems [Eric to hate eels]]

In (14), *Eric* is the grammatical/logical subject, and the embedded subject PRO bears different θ -role from the matrix subject. Notice that no movement occurs in (14) before SS, and the co-indexation of *Eric* and PRO is formed by the merger of the lexical item. As for (15), *Eric* cannot occupy the subject position of *seems* since it is not a thematic position, and thus by definition should remain empty. Only when the derivation is shipped to SS would *Eric* move to the subject position to satisfy the EPP and be assigned Case. In such a manner, the behavioral/semantic difference between control and raising structures can be captured with the help of DS.

Now, let us consider this without postulating DS. Crucially, if the conceptionally indispensable LF were proven to be able to do what DS can, the necessity of assuming DS would be weakened. Still, by assuming DS, the derivation in (16) can be ruled out since it violates the Thematic Condition.

- (16) *[Eric_i hoped [t_i to go south]]

The θ -role [HOPER] cannot be discharged at DS since *Eric* is supposed to be moved to the subject position after DS. Here, I follow Hornstein et al.'s (2005) *Theta-Role Assignment Principle* (TRAP) to differentiate (14) from (16).

- (17) *Theta-Role Assignment Principle* (TRAP)

External Merge is the only operation responsible for the construction of theta-relations.

Note that in (17) the conditions of TRAP are not restricted to any particular levels of representation, and hence there will be no need to assume DS to rule out (16). After being merged to the embedded clause, *Eric* in (16) may be assigned with the θ -role [GOER] at LF, but cannot be assigned with [HOPER] according to TRAP since it is moved to, say, [SPEC, IP], resulting in the violation of Thematic Condition. Consequently, we can expect the DS form in (14) to be exactly like its LF form, given that no Displacement takes place here.

In sum, as I have argued above, once DS/SS lose their empirical basis, we no longer have need to postulate them, and that seems in fact to be the case. Hence, in this dissertation, I do not assume redundant DS and SS.

Apart from the levels of representation, another major subject in the minimalist enterprise will be introduced in the present work: checking theory. Recall the assumption that nominal elements must be assigned with Case at SS. However, as we now think of SS as a conceptually redundant stipulation, how do we implement Case Theory without it? Note the realization of Case Theory at SS would essentially rely on the operation of Case-assignment, and if we assume that Case is not assigned to nominals but specified in numeration before entering syntax, the notion of Case-assignment would be better eliminated.

Chomsky (1993) argues that if Cases of DPs are specified before they are fed to PF/LF, there is no need to assume that Cases must be checked at SS to guarantee their phonetic distinguishableness. In that case, for example, nominative *he* retains its form throughout the derivation. What the computational system needs to do now is to make sure that *he* occurs correctly at the subject position.

- (18) LF:
*Eric hates_{ACC} he_{NOM}.

In (18), *he*, bearing nominative case, cannot show up after transitive verbs like *hate*.

Since checking theory demands that the Case-feature be checked with a matching head, and *he* cannot check its nominative case with *hates*, which is associated with accusative case. However, (18) can be remedied if we substitute *he* for accusative-case-specified *him*, where the checking relation obtains. Note that all the operations mentioned above take place at LF, obviating the need to assume SS.

Here, one may wonder why features must be checked. Once *Eric* in (18) enters the derivation, why would it check its nominative case feature with INFL head? In one view of the minimalist perspective, the answer lies in the interpretability of features. Under the presumption that lexical entries encompass phonological, semantic, and formal features, one may naturally assume that no phonological features are interpretable at LF and vice versa. Consider the ϕ -feature-checking scenario in Latin:

- (19) *Latin*
- | | | | |
|----------------|---------------------|------|------|
| Ann- us | terribil- is | MMXX | est. |
| year-MASC.SG | terrible-MASC.SG | 2020 | is |
- ‘2020 is a terrible year.’

The formal features [GENDER: MASC] and [NUMBER: SG] are incarnated on *annus* and *terribilis*, respectively. Notice that although this feature appears twice in this sentence, the interpretation ‘2020 is a terrible year, and it is a masculine singular year twice’ is out of the question. Thus, only one segment is obtainable at LF ([+interpretable]), and the other ([−interpretable]) should be deleted to avoid the violation of Full Interpretation.

The existence of uninterpretable feature is said to be the only reason that licenses movement, which gives rise to the Last Resort Condition.⁵

- (20) *Last Resort:*
- Movement is licit only if it gets uninterpretable features checked.

⁵ Termed *Greed* in Chomsky (1993), and *Enlightened Self-Interest* in Lasnik (1995d).

It is noticeable that movement may happen overtly or covertly. That being said, an element can be moved from its original position before or after Spell-out. If the movement takes place at LF, it is then covert movement. Languages like Chinese and Japanese show covert *wh*-movement, for instance.⁶

- (21) a. 小李买了什么?
 Xiaoli mai-le shenme?
 Xiaoli buy-ASP what
 ‘What did Xiaoli buy?’
- b. Momoko-wa nani-o kat-ta no?
 Monoko-TOP what-ACC buy-PAST Q
 ‘What did Momoko buy?’

If the Last Resort Condition stands, the *wh*-words would move at LF to check the feature $[-wh]$ of C, for otherwise the derivation would crash. Hence, (21a)’s LF will be in the form of (22).

- (22) LF:
 [CP Shenme_i C [IP Xiaoli mai-le t_i]]

Assuming that (22) is a convergent derivation since all the $[-interpretable]$ features are properly checked, what could possibly go wrong if the movement of *shenme* is carried out overtly? To answer this question, Chomsky states the condition of Procrastinate (1995: 262), whereby pre-Spell-out operations would be more costly than post-Spell-out operations. Following Collins (1997) and Terada (1998), however, I do not invoke Procrastinate in this

⁶ An alternative approach claims that the *wh*-structure in Chinese involves Unselective-Binding instead of movement; see Tsai (1999).

dissertation. Let us consider the details.

First, if covert movement is more economical than overt movement, the application of overt movement can only be undertaken to circumvent the mismatch of phonological/semantic features that would eventually cause the derivation to crash at PF. In other words, the legitimacy of overt movements does not get examined until it reaches PF, rather than at the stage where movements do happen. Second, postulating Procrastinate amounts to saying that covert and overt movement are inherently different operations and can only be applied before or after Spell-out, which does not seem to comply to the metatheoretical Uniformity Condition.

(23) *Uniformity Condition*

Rules that apply to overt components must be available to covert components.

In the view of derivational convergence, a sentence like (21a) is unproblematic even if the *wh*-word moves overtly, since the formal features carried by the *wh*-word can be checked anyway. Apart from this, I argue that there is no appealing reason to falsify the PF outcome of such overt movement. Observe that syntactic objects within an interrogative can be overtly topicalized in Chinese, and in order to check the [Question] feature, it is supposed to land at the very position of *wh*-words, which suggests that nominal elements are not excluded from the domain of C. Therefore, given the well-formedness of (24), one can hardly tell why the PF of (25) is bad.

(24) 书, 阿猫买了?
Shu, Amao mai-le?
book Amao buy-ASP
'Did Amao buy any books?'

(25) 什么, 阿猫买了?
?Shenme, Amao mai-le?
what Amao buy-ASP?

‘What did Amao buy?’

Chomsky (2000, 2001, 2004) formulates an alternative approach to solve the problems presented above, namely, the operation Agree. Imposing Agree on feature-checking in terms of derivational convergence, the inadequacy shown by introducing Procrastinate disappears. Under this approach, only [+interpretable] features are specified in the Lexicon; conversely, [–interpretable] features must be valued in the derivation. In the morphological component, as the valuation of [–interpretable] takes place, the morphological requirement must also be met. That is to say, Agree is assigned two roles: valuing [–interpretable] features and specifying morphological realization.

Probe and *Goal* are designated to be the subjects of Agree, and the matching relation between them plays the role of Move-F⁷ and covert movement. A probe is by definition a head embedded with an [–interpretable] feature. A goal is required to have the [+interpretable] feature that matches the probe’s. Besides, in order to yield the correct Agree-relation, (i) the goal must be located in the probe’s c-command domain, and (ii) there can be no intervening element carrying the relevant feature (see Rizzi 1990, 2001’s Relativized Minimality) between probe and goal.

For concreteness, I use a Latin phrase in (26) to illustrate the mechanism of Agree for expository purposes, since it displays a full-fledged ϕ -feature agreement.

- (26) Poeta eam amavit.
 poet-NOM.MASC.SG her-ACC.FEM.SG.3 love-PERF
 ‘The poet has been in love with her.’

- (27) a. Stage I: Built vP through Merge

⁷ Proposed in Chomsky (1995) to replace the operation of covert movement of categories. Overt movement is perceived as feature movement pied-piping categories, while covert movement is rendered as feature movement without category. Hence, all the movements can be considered overt. See Pesetsky (2000) for an opposite analysis.

- [vP $v_{\{NUMBER:?, PERSON:?\}}$ [VP $ea_{\{NUMBER:SG, PERSON: 3, CASE: ?\}}$ amo]]
- b. Stage II: Agree between v and internal argument
- [vP $v_{\{NUMBER:SG, PERSON:3\}}$ [VP $eam_{\{NUMBER:SG, PERSON: 3, CASE:ACC\}}$ amo]]
- c. Stage III: Merge of external argument and T
- [TP $T_{\{NUMBER:?, PERSON:?, ASPECT: PERF\}}$ [vP $poeta_{\{NUMBER: SG, PERSON: 3, CASE:?\}}$ [$v' \dots$]]]
- d. Stage IV: Agree between T and external argument
- [TP $T_{\{NUMBER:SG, PERSON:3, ASPECT: PERF\}}$ [vP $poeta_{\{NUMBER: SG, PERSON: 3, CASE:NOM\}}$ [$v' \dots$]]]
- e. Stage V: Morphological specification
- [TP $-vit$ [vP $poeta$ [$v'V$ [VP eam amo]]]]]
- f. Stage VI: Reaching PF
- Poeta eam amavit.

In (27a–b), the light verb head v acts as probe and detects ea in its complement, and Agree is activated: The unvalued features of v are then valued/deleted, and rendered invisible in LF. Likewise, the unvalued Case-feature of internal argument is specified as accusative within the Agree-relation between v and ea , and the pronoun will surface as eam after the phonological feature is encoded. Since the light verb associated with transitive verb is arguably the licensing head of accusative case-marking, it is reasonable to take v to be the giver of accusative marking. Alternatively, as the case feature is the formal feature par excellence (Chomsky 1995), we may assume with Kishimoto (2013: 180) who maintains the idea the case-marking is not determined through Agree but set in the lexicon. The purpose of the valuation of case-feature is to valued/delete this semantically empty feature, where T and v value nominative case and accusative case respectively. The story proceeds in (27c–d), where $poeta$ and T head are merged into the derivation. Since $poeta$ is the only goal accessible to T, Agree applies to it. As a result, the unvalued features of T are properly valued/deleted, and $poeta$'s Case-feature is specified as nominative (following the proposal of Kishimoto, nominative case is valued by T because the presence/absence of T correlates to the licensing

of nominative case-marking. This claim can be supported by the nominative object in Japanese, which is argued to be moved to TP after the Agree with T, but not ν , in Koizumi (2008).

Due to the fact that the word order of Latin is highly free, I assume that the subject *poeta* does not need to move to [SPEC, TP] to check the EPP-feature because the T of Latin does not have a strong EPP-feature that needs to be checked by category, just like its descendant Italian, for example. In fact, there does not seem to be any PF-requirement that excludes *poeta* from any position in such sentence. Thus, the LF in (27d) may have multiple PF representations, conforming to this fact.

To sum up, the approach of Agree shows conceptual merit in not relying on the problematic operation of Procrastinate since the computational system does not resort to the operation of covert movement in an Agree-based construction, and in the present work, since I adopt Agree as the guideline of clause-building, the notion of covert movement will be marginal. As to the motivation of overt movement, besides the stated EPP-requirement, I adopt Miyagawa's (2010: 35) Probe-Goal Union which dictates the participants of an Agree relation must be local, the record of the functional relation built by Agree will never be available in the semantic components otherwise, because Agree can be long-distance. The Goal thus undergoes overt movement to the specifier position of its Probe, where a local structure retains.

Finally, recent minimalist developments will be taken into consideration. We will see what new light can be shed on Chomsky's (2013, 2015) *Problems of Projection Extensions* framework, POP(E) hereafter. POP(E) is generally motivated by the Strong Minimalist Thesis, whereby language is an optimal solution to the condition of legibility (see Chomsky 1998, 2005). Linguistic Expressions, therefore, are supposed to be legible to systems external to the linguistic system. In other words, quoting Chomsky (2007:4), the revised MP-approach should impose fewer operations or conditions that are UG-oriented:

The MP seeks to approach the problem “from bottom up”: How little can be attributed to UG while still accounting for the variety of I-languages attained,

relying on third factor principles?

In the spirit of SMT, the Faculty of Language (FL) must comply to the laws of nature just like our physical organs (Third-Factor Principle). In order to address the problem of evolvability (languages emerge on a very short timescale, hence we expect the operations that are only applicable to languages to be as minimal as possible) and properly capture the two fundamental natures of FL, Discrete Infinity (i.e., the unlimited productivity of human languages) and Displacement (i.e., languages' ability to refer to entities not immediately observable), Merge is argued to be the only operation available in the theory of POP(E). This Merge forms an unordered set, and roughly corresponds to the term Substitution.⁸

$$(28) \quad \text{Merge } (\alpha, \beta) = \{\alpha, \beta\}$$

The scheme of Merge in (28) is called set-Merge, meaning that the $\{\alpha, \beta\}$ built above is a symmetric structure. In addition to set-Merge, Chomsky (2015) postulates that there is another form of Merge that roughly corresponds to Adjunction: pair-Merge. An asymmetric structure would be built if pair-Merge is chosen.

$$(29) \quad \text{pair-Merge } (\alpha, \beta) = \langle \alpha, \beta \rangle$$

Once the Merger is carried out externally (EM), the formed set comprises elements that are directly extracted from the lexicon. Conversely, if the Merge applies internally, one element is formerly contained in another (IM). No matter what kind of Merge the computational system chooses, as soon as a Syntactic Object (SO) is formed,

⁸ Note here that the Merge operation in POP(E) is slightly different from the Merge in the preliminary MP-approach in two major respects: (i) Merge in POP(E) applies freely; thus, Last Resort is no longer valid. (ii) Merge in POP(E) does not encode Labels to the Syntactic Object formed by it, in contrast to the Merge in the Bare Phrase Structure.

it must be labeled to be interpreted at C-I interface by the Labeling Algorithm (LA). The labeling process, being subject to the Third-Factor Principle (i.e., principles that are non-language-specific; see Chomsky 2005), takes place by Minimal Search (MS), which locates the most shallowly embedded head. Thus, there could be three distinct labeling scenarios.

- (30) a. *SO built with Head and XP*
 SO {H, XP}: SO labeled as H
- b. *SO built with XP and YP*
 SO{XP, YP}: raise YP → SO labeled as XP
- c. *SO built with XP and YP*
 SO{XP_[F], YP_[F]}: MS finds the sharing [F] → SO labeled as <F, F>⁹

With the revision of Merge, alongside the requirement of labeling, let us now consider how a phrase like *Mary has a lamb* would be derived under the current theoretical framework (R in (32a) stands for *semantic root*, which can be seen as the equivalent to the traditional V head. R is not categorially capable of offering a labeling, thus it is not a syntactic object before merging with the phase head v*).

- (31) Mary has a lamb.
- (32) a. {_αR, a lamb_φ}, Form α by EM
- b. {_βa lamb_φ {_αR, t_{a lamb} }}, Form β by IM
- c. {_γv* {_β a lamb_φ {_αR_{uφ}, t_{a lamb} } }}, Form γ by EM; reaching phase level;
- d. Inheritance takes place, R's phasehood activated, Labeling takes place
- e. α labeled as R; β labeled as <φ, φ>; R raises to v* through IM, v* gets affixed. γ labeled <R, v*>

⁹ <φ, φ> used here does not imply that the sharing features have an inner hierarchical configuration.

- f. The complement of t_R gets transferred to interfaces.
- g. $\{\varepsilon T \{\delta \text{Mary}_\varphi \{\gamma v^* \{\beta \text{ a lamb}_\varphi \{\alpha R_{u\varphi}, t \text{ a lamb } \}\}\}\}\}$, Form δ and ε by EM
- h. After the next phase head C is merged, T inherits $u\varphi$ from C. Mary is raised to Specifier of T. δ labeled Mary; ε labeled $\langle \varphi, \varphi \rangle$.
- i. The complement of C gets transferred to interfaces.

R in (32) in the semantic root of verb *have*, after being affixed to v^* , which is said to be phase-head and verbalizer, to form $\langle R, v^* \rangle$, will eventually be externalized as *has*. As for why *a lamb* and *Mary* are pair-Merged to specifier positions of R and T respectively, Chomsky (2015a: 7–8) claims that R and T are universally too weak to serve as the label until they are strengthened by nominals at their specifier positions.¹⁰ EPP/ECP and *that*-trace effect may resort to the labelability of T uniformly under the POP(E) approach, which, again, seems to be a good exemplification of the Third-Factor Principle.

1.3 Defining Modal verbs in Chinese and the Basic Construction

As pointed out in 1.1, many scholars divide Chinese modal verbs into three subgroups: epistemic, deontic and dynamic. Their classifications do seem to capture some essential syntactic/semantic properties shown by these modal verbs. For examples, I will briefly show that this trichotomy of Chinese modal verbs fits in the prevailing definition of modal verbs outlined in Palmer (1979, 2001).

First, illustrated in Palmer (2001: 7), the notional difference between *may/must* pair in (33a-b) and (34a-b) can be paraphrased with the assistance of *necessary/possible* and distinct

¹⁰ The parameter regarding the strength of R and T remains controversial to date. See Goto (2017) and Hayashi (2020) for opposite analyses. Related issue will be discussed in Chapter 5.

complementizers, as in (33b-c) and (34b-c).

- (33) a. John must be a cop.
b. John may be a cop.
c. It is necessarily the case that John is a cop.
d. It is possible that John is a cop.
- (34) a. John must wake up.
b. John may wake up.
c. It is necessary for John to wake up.
d. It is possible for John to wake up.

The contrast shown above clarifies that there is a distinction between ‘propositional modality’ and ‘event modality’, usually termed as ‘epistemic modality’ and ‘deontic modality’, and we may use this distinction to tell epistemic modal verbs from deontic modal verbs in Chinese as well. Consider (35) and (36) now.

- (35) a. 约翰可能是警察。
Yuehan kenengshi jingcha.
John may^E COP police
‘John may be a police officer.’
- b. 约翰是警察这件事有概率是真的。
Yuehan shi jingcha zhejianshi you gailü
John COP police this-matter have possibility
shi zhende.
COP true
‘(Lit.) There is a possibility that John is a police officer.’
- (36) a. 约翰应该起床。
Yuehan yinggai qichuang.
John should^D wake-up

‘John should wake up.’

b. 约翰有义务起床。

Yuehan you yiwu qichuang.

John have obligation wake-up

‘John has the obligation to wake up.’¹¹

Note that (35a) and (36a) are paraphrased in a very different way. Although both (35b) and (36b) involve a nominal expression led by *you* ‘to have’, as *you gailü* ‘have possibility’ in (35b) and *you yiwu* ‘have obligation’ in (36b). It is important to note that the subject of *you* in (35b) is the entire proposition ‘John is a police officer’, whereas the subject of *you* in (36b) is *John* himself. In a word, this paraphrased sentences above seem to accord with Palmer’s generalization that epistemic modality expresses the speaker’s true or false judgement to a proposition while deontic refers to a potential event. I will show next that the epistemic modal verbs and deontic modal verbs discussed in this thesis are all qualified to be paraphrased in the way of (35-36).

(37) *Paraphrasing epistemic modal verbs:*

¹¹ It seems unproblematic to paraphrase (35a) in a way analogous to (36b), since *keneng* itself can function as noun, resulting in sentence like (i). However, it should be pointed out *keneng* is the only modal verb that can also be a noun, in that it is impossible to paraphrase *yinggai*, the other epistemic modal verb, through the same method, as in (ii). Furthermore, it should be highlighted that deontic modal verbs can never be paraphrased in the way of (35), since (iii) is utterly unacceptable, which in turn suggests that it is better to analyze that epistemic modals and deontic modal use distinct paraphrasing strategy.

- (i) Yuehan you keneng shi jingcha.
 John have possibility COP police
 ‘It is possible that John is a police officer.’
- (ii) *Yuehan you yinggai shi jingcha.
 John have may^E COP police
- (iii) *Yuehan qichuang zhejianshi you yiwu.
 John wake up this-matter have bligation

a. 他可能/(应该)是学生。
 Ta keneng/(yinggai) shi xuesheng
 he may^E COP student
 ‘He may be a student.’

b. 他是学生这件事有概率是真的。
 Ta shi xuesheng zhejianshi you gailü shi
 he COP student this-matter have possibility COP
 zhende.
 true

“(Lit.) There is possibility that John is a student.”

(38) *Paraphrasing keyi as non-epistemic modal verb*

a. 他可以回家。
 Ta keyi hui jia
 he may^D return home
 ‘He may go home.’

b. 他有条件回家 (因为不堵车)。
 Ta you tiaojian hui jia (because there is no traffic).
 he have condition return home
 ‘He satisfies the condition to go home.’

c. 他有权回家 (因为获得同意)。
 Ta you quanxian hui jia (because he is allowed to).
 he have permission return home
 ‘He has the permission to go home.’

d. 他回家这件事有概率是真的。
 #Ta hui jia zhejianshi you gailü shi zhende.
 he return home this-matter have possibility COP true
 ‘There is possibility that he goes home.’

My inventory for epistemic modal verbs does not include *keyi*, contra Hsu's (2008) generalization. The reasoning is, *keyi* cannot be paraphrased in analogy to *keneng* or *yinggai*, since it exclusively refers to an unactualized event instead of the trueness/falseness of the proposition. Hence, it is not surprising (38d) would be an infelicitous (marked with #) paraphrasing for *keyi*. In fact, I argue *keyi* should be categorized as a deontic modal verb, since it generally indicates Permission, either granted by individuals or objective conditions, as demonstrated in (38b-c).

Besides *keyi*, I additionally consider modal verbs like *yinggai*, *neng*, *yao* and *hui* as deontic. Since both of them can be paraphrased in the form of 'have + nominal (Permission, Obligation or Disposition)'. Consider (39).

(39) *Paraphrasing yinggai*

a. 他应该回家。

Ta yinggai hui jia.
 he should^D return home
 'He should go home.'

b. 他有义务回家。

Ta you yiwu hui jia.
 he have obligation return home
 'He has the obligation to go home.'

(40) *Paraphrasing neng*

a. 你能抽烟。

Ni neng chouyan.
 you can^D smoke
 'You can smoke.'

b. 你有权限抽烟。

Ni you quanxian chouyan.
 you have permission smoke
 'You have the permission to smoke.'

- (41) *Paraphrasing yao*
- a. 你要记住我。
- Ni yao jizhu wo.
 you will^D remember me
 ‘You will remember me.’
- b. 你有义务记住我。
- Ni you yiwu jizhu wo.
 you have obligation remember me
 ‘You have the obligation to remember me.’
- (42) *Paraphrasing hui*
- a. 他会去你家。
- Ta hui qu nijia.
 he will^D go you-house
 ‘He will go to your house.’
- b. 他有意向去你家。
- Ta you yixiang qu nijia.
 he will^D disposition go you-house
 ‘He has the disposition to go to your house.’

At last, dynamic modal verbs can be paraphrased in a way similar to deontic modal verbs, since they are both subject to Event modality (Palmer 2001: 9). The difference between them is that the conditioning factors are external to the individual in the case of deontic modality, while they are internal with dynamic modality. Following this guideline, *neng*, *hui*, *yao*, *gan*, *keyi* and *ken* will be the candidates for dynamic modal verbs in this thesis, since they all can

be paraphrased in the form of ‘you + ability/volition’¹².

(43) *Paraphrasing neng*

a. 我能说汉语。

Wo neng shuo Hanyu.

I can^{Dy} speak Mandarin

‘I can speak Mandarin.’

b. 我有能力说汉语。

Wo you nengli shuo Hanyu.

I have ability speak Mandarin

‘I have the ability to speak Mandarin.’

(44) *Paraphrasing hui*

a. 我会说汉语。

Wo hui shuo Hanyu.

I can^{Dy} speak Mandarin

‘I can speak Mandarin.’

b. 我有能力说汉语。

Wo you nengli shuo Hanyu.

¹² The internal/external contrast between them can be marked by the selection of subjects. In short, the subject of deontic modal verbs in Chinese can be a location/timepoint, whereas that of dynamics cannot.

- (i) 这里可以抽烟。
zheli keyi chouyan
here can^D smoke
‘One is allowed to smoke here’
- (ii) 五点就能走。
wudianthen can^D go
‘One is allowed to leave at 5.’
- (iii) 这里敢抽烟
Zheli gan chouyan
*here dare^{Dy} smoke

I have ability speak Mandarin

'I have the ability to speak Mandarin.'

c. 我会留下。

Wo hui liuxia

I will^{Dy} stay

'I will stay.'

d. 我有意愿留下。

Wo you yiyuan liuxia.

I have volition stay

'I have the volition to stay.'

(45) *Paraphrasing yao*

a. 我要回家。

Wo yao hui jia.

I will^D return home

'I will go home.'

b. 我有意愿回家。

Wo you yiyuan hui jia.

I have volition return home

'I have the volition to go home.'

(46) *Paraphrasing gan*

a. 我敢吃虫。

Wo gan chi chong.

I dare eat insect

'I dare eat insects.'

b. 我有勇气吃虫。

Wo you yongqi chi chong.

I have courage eat insect

'I have the courage to eat insects.'

(47) *Paraphrasing ken*

a. 他肯学习。

Ta ken xuexi.

he will^{Dy} study

‘He will study.’

b. 他有意愿学习。

Ta you yiyuan xuexi.

he have volition study

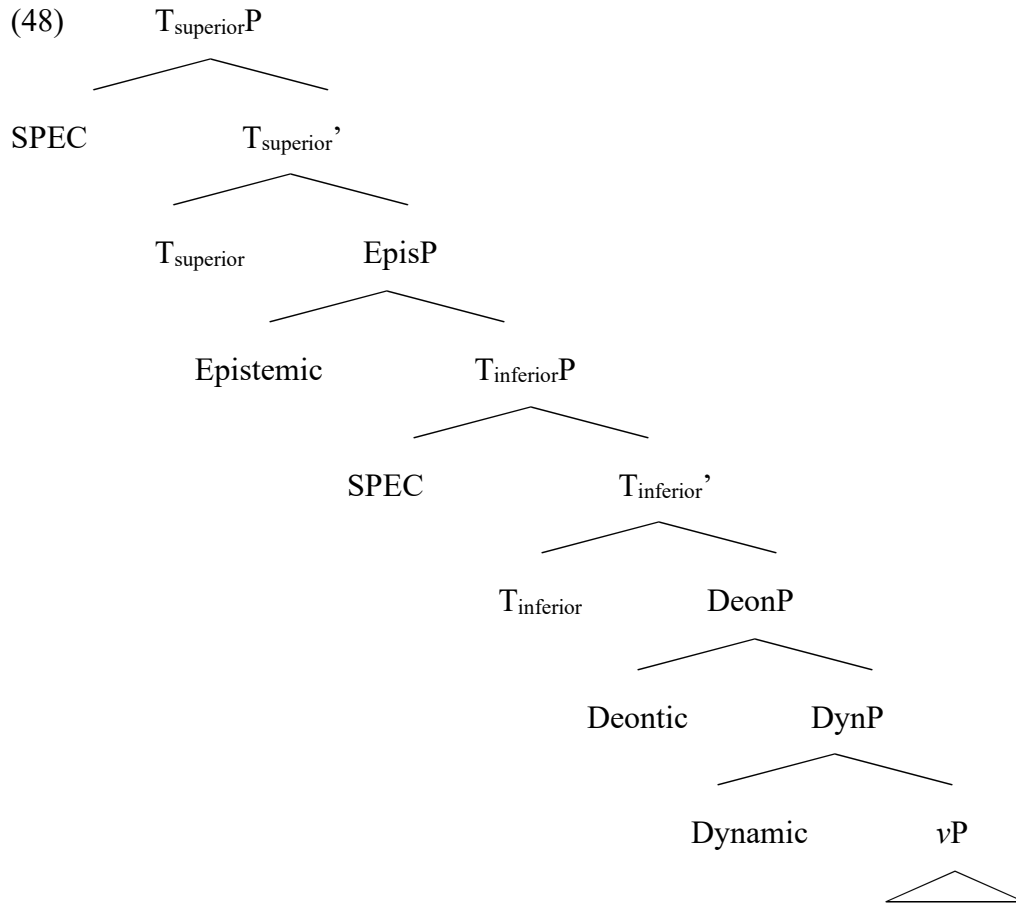
‘He has the volition to study.’

With all the paraphrased expressions made above, the whole picture seems to be evident. That epistemic modal verbs can be paraphrased in the form of [a proposition has possibility to be true] while deontic and dynamic modal verbs are [an individual has the permission/obligation to...] and [an individual has the ability/volition to...], which I believe correctly captures the essence of Propositional modality and Event modality.

Note that some of the modal verbs paraphrased above can appear in different clusters. Specifically, the following modal verbs are polysemantic: (i) *yinggai*: Epistemic/Obligation; (ii) *hui*: Ability/Volition/Disposition; (iii) *yao*: Obligation/Volition; (iv) *neng*: Permission/Ability. One of the basic proposals of this thesis is that the syntax-semantics mapping of these modal verbs can be principled in a derivational way, and I assume polysemantic modal verbs would have distinct syntactic behaviors than monosemic ones as shown below.

In this thesis, I propose an alternative configuration of Chinese modal verbs system that not only maintains the descriptive accuracy attained in previous studies, but also offers solutions to some linguistic idiosyncrasies. With regard to their categorial structural status, I argue modal verbs in Chinese are heads of their own phrases in line with Hsu (2008), Lin (2012) and Tsai (2015) (this analysis is also utilized to deal with the stacked-auxiliary situation in languages like English, see Cinque 1999, 2004 for example). However, my approach differs from theirs significantly in that only a part of modal verbs are assumed to

be raised to T head to have the intended meaning through valuing their uninterpretable features via the operation Agree (I will discuss the possibility of Modal-to-[SPEC, T] in 2.2.1). One of the decisive reasons that motivates this alternative rests on the polysemantic nature of Chinese modal verb, and I attempt to reduce it to the syntactic computation rather than presuming there are multiple entries of a single lexical item. Crucially, I argue modal verbs with multiple meanings must have an Agree relation with T head to value their inherently uninterpretable {MODAL:?} features, in that they get to determine the specific modal meanings. On the other hand, those only have one interpretation is not obliged to enter an Agree relation with T head. Hence, a hierarchy in reference to Chinese modal verbs can be sketched as follows:



The structure depicted above exhibits several structural reformulations of those topologized in Hsu (2008) or Tsai (2015). First, the T head is split into two independent heads, namely T_{superior} and T_{inferior} , which would project separately. As to the Agree-related function, I assume T_{superior} is responsible for the Agree relations with epistemic modal verbs, whereas T_{inferior} for root (deontic and dynamic) ones. I will return to the motivation for this structural design in 2.2.

At last, in contrast to Tsai's (2015: 15) mapping of modal verbs hierarchy, according to which the DynP is the complement of v , I argue dynamic modal verbs take a place higher than v as in (48). Illustrated in (49), *ba*-phrase occurs exclusively at the right-side of the dynamic modal verb:

- (49) a. 张三敢把李四打。
 Zhangsan gan ba Lisi da.
 Zhangsan dare BA Lisi beat
 ‘Zhangsan dare beat Lisi.’
- b. *张三把敢李四打。
 Zhangsan ba gan Lisi da.
 Zhangsan BA dare Lisi beat

If Huang et al. (2009: 178) is correct in assuming *ba* is generated at a position higher than *v*, it would be natural for us to analyze dynamic modal verbs as something also higher than *v*. Furthermore, as I will discuss in Chapter 4 that this hierarchical representation also guarantees that modal verbs in Chinese can determine the tense anchoring.

1.4 The Structure of The Dissertation and Proposals

The Organization of this dissertation is as follows: Chapter 2 is concerned with some basic parametrized settings with regard to the projection of Tense head in Mandarin Chinese. In the first step, I will address the fundamental question about whether or not there is a syntactic Tense head in Chinese, given this is still an ongoing debate. I concur with the proponents of a syntactic T, including Sybesma (2007), N. Huang (2015) and N. Li (2016), by presenting additional evidence in support of a genuine T head. In particular, I show that relativized clauses in Chinese are in fact sensitive to the syntactic T-related condition instead of semantic temporality. With the validity of syntactic T is assumed, I further propose a Split-T hypothesis on the basis of empirical data, according to which there are two independent T heads within one sentence that encodes temporality respectively. Also, this two-T configuration paves the way for further investigations of this dissertation as Chinese allows two modal auxiliaries in one clause in contrast to languages like English. Furthermore, I map out the left periphery topology of Mandarin Chinese which is of the particular interests

concerning the discussions about modal verbs.

Chapter 3 addresses the epistemic modal verbs (EMV) in Chinese and particularly emphasizes the asymmetry observed between the two EMVs that, to the best of my knowledge, has not been discussed by any authors. Although both translated as *may* or *might*, the two EMVs in Chinese, namely *yinggai* and *keneng*, demonstrate a number of differences. I argue that such differences lie in the contrast of polysemantic vs. monosemic as well as subjectivity vs. objectivity. In short, the reason why *keneng*, but not *yinggai*, can appear at (i) a pre-subject position; (ii) a sentential-final position is that *yinggai* is a modal verb with more than one interpretation hence it must have its meaning specified in the process of derivation. Specifically, I assume the mechanism can be realized by assuming *yinggai* bears uninterpretable {uModal} feature inherently, which can be properly valued via the Agree relation with T head. By doing so, *yinggai* can have its meaning determined in alignment with Full Interpretation. However, if {uModal} is valued through Agree, the position where *yinggai* ends up to be would then become a Criterial position (Rizzi 2016), indicating that a freezing effect is activated on *yinggai*, which simply prohibits *yinggai* from further categorial movement. On the other hand, *keneng* is monosemic by nature hence suffers from no such restrictions. Therefore, *keneng* would have a wider range of surface distribution. On the other hand, the contrast of subjectivity vs. objectivity is crucial in the context of scopal properties with respect to the differences between *keneng* and *yinggai*. I provide evidence to show that the interpretive property of the two EMVs are distinct on the level of subjectivity (*pace* the Necessity>Possibility approach in T-H. Lin 2012), and the reason why *yinggai* cannot appear in a wh-construal or yes-no question is that it is subject to the quantifier-scoping restriction (von Stechow and Iatridou 2003), because it denotes subjective conjecture. Hence, its feature-movement to iForce would be blocked by the intervening wh-phrases or interrogative particle. *Keneng*, however, is not stranded in the proximity of T head, hence it can be externally merged to iForce or stay at the base-generation position. This analysis accords with S-Y. Lin (2012) that *keneng* can both indicate subjective or objective conjecture. Besides the difference

between *yinggai* and *keneng*, I also examine the non-adverbs status of *yinggai* and *keneng*, as well as the sequential property of the cooccurrence of them.

In Chapter 4, I turn to the root modal verbs. In analogy with the arguments made in Chapter 3, the polysemantic vs. monosemic contrast is again able to account for several idiosyncrasies that the traditional Deontic-Dynamic dichotomy may fall short of. In particular, I show that only the monosemic root modal verbs can be (i) Focus-driven doubled; (ii) preceded by polysemantic modal verbs; (iii) negated by *mei*. In effect, all these asymmetricities can be deduced from whether or not the movement to T is mandatory.

Chapter 5 concludes this dissertation.

Chapter 6 addresses some remaining issues and explore whether if the theoretical roadmap of the current work can be applied to other languages.

2. TP and Beyond

In this chapter, I will deal with more specific issues regarding the TP of Chinese. Since modals (auxiliaries) are often argued to be raised to T in the literature (also in this thesis)¹³ (cf. Emonds 1978, Akmajian et al. 1979, Pollock 1989, 1997, Roberts 1998, Rouveret 2012), the configuration of TP in Chinese needs to be clarified before we consider the inherent properties of modals. In this chapter, I will argue why it is necessary to assume TP in Chinese. On the basis of this assumption, I will formulate a Split-T specification that posits two T heads within one clause.

2.1 Syntactic T in Chinese

In this section, given that the core proposals for Chinese modal verbs in this thesis would greatly rest on the postulation of T head, and yet whether Chinese employs syntactic Tense is still under debate. I will side with the concept that Chinese also has a TP projection in the clause structure. As Chinese does have syntactic morphemes that correspond to the semantic tense which denotes the relation between Event Time and Utterance Time

Due to its analytic nature, Chinese is often thought to be a syntactically tenseless language. Such claim does not seem dubious, since one can hardly find overt

¹³ Alternative analyses have been made in Cinque (1999, 2004) and Bjorkman (2011) arguing that, since it is possible for English to construct a phrase with multiple modals, it is rational to postulate a projection for every modal head. Thus, there may be an intermediate hierarchy between TP and VP.

(i) TP > ModP > PerfP > ProgP > VoiceP > VP

However, in this paper, I do not install such an intermediate hierarchy on Chinese, as we will see in 2.2, 3.1, because the modal verb system of Chinese is quite different from that of English. For example, the marker of the passive in Chinese is arguably in isolation from the domain of TP, since it can never be affixed by aspect markers (cf. *is/was, are/were, have been/has been*).

morphological evidence to argue for the existence of tense. When specifying the event time of an expression, it is either indicated by temporal adjuncts or inferred from context, as in (1-2).

- (1) 我喜欢看漫画。
Wo xihuan kan manhua.
I like see Manga
'I like to read Manga.'
- (2) 我曾经喜欢看漫画。
Wo cengjing xihuan kan manhua.
I once like look Manga
'Once upon a time, I liked to read Manga.'

The adverb *cengjing* 'once' is the only reason why (2) is interpreted as past tense. Other than that, there is no additional element that may evoke the past tense reading. With this understanding, Li and Thompson (1981), Hu, Pan and Xu (2001), and J.W. Lin (2006, 2010), among others, do not assume the existence of tense in Chinese. These researchers are inclined to take the Aspect Phrase to be the projection that encodes the temporal reference. Nonetheless, claiming that Chinese is a tense-less language may face a vital question: where does the temporal reference come from in the cases like (1-2)? To answer this question, J.W. Lin (2006) thus claims that AspP is the functional projection playing the role of TP in inflectional languages like English. In short, he assumes perfective aspect encodes past tense while imperfective aspect is irrelevant to tense encoding. However, Li (2016) argues Lin's assumption involves an additional semantic rule which complicates semantic derivations. Li further points out that assuming perfective aspect denotes past tense by default amounts to say that aspect marker *le* encodes past tense if uttered out of blue, which seems to be the case:

- (3) 我去了学校。
 Wo qu-le xuexiao.
 I go-ASP school
 ‘I went to school.’

Question, however, arises when sentences like (3) are in the form of negation, consider (4):

- (4) 我没有去学校。
 Wo meiyou qu(*-le) xuexiao.
 I have-not go school
 ‘I didn’t go to school.’

As noted in Li (2016: 29), the negative form of a *le*-marked verb must not be affixed by *-le*. Instead, the negation morpheme *meiyou* appears before the verb, as illustrated in (4). If the Aspect-as-Tense proposal of Lin (2006) is on the track, we may predict *-le* would also show up in a negative clause, because such clause does manifest the notion of ‘*didn’t*’, contra the fact shown in (4). In addition, treating *meiyou* as a negative aspect marker encoding past tense which is in complementary distribution with *-le* does not seem to help. As shown in (5), the imperfective aspect marker *zhe* can also be negated by *meiyou*. Therefore, it is very likely that *meiyou* does not encode past tense as an aspect marker.

- (5) a. 树上结着果。
 Shushang jie-zhe guo.
 tree-up form-ASP fruit
 ‘Fruits are hanging from the tree.’
 b. 树上没有结果。

Shushang	meiyou	jie-zhe	guo.
tree-up	have-not	form-ASP	fruit

‘There are no fruits hanging from the tree.’

In fact, *meiyou* can occur at a position higher than AspP indicating that *meiyou* cannot be analyzed as an aspect marker located beneath the projection of AspP:

(6) 我没有去过东京。

Wo	meiyou	qu-guo	Dongjing.
I	have-not	go-ASP	Tokyo

‘I’ve never been to Tokyo.’

The question is then what is the structural position of *meiyou*? Li (2016: 35) first excludes the possibility that *meiyou* is within NegP, since NegP is argued to be either above or below TP cross-linguistically (cf. Laka 1990; Haegeman 1995). As it seems to be universally true that a sentential negator can be observed in either finite or non-finite clauses:

(7) *English*

- a. Mary did not have a little lamb.
- b. Mary forced the lamb not to trample on the meadow.

(8) *Japanese*

- a. メアリは子羊を所有していなかった。

Mary-wa	kohitsuji-o	shoyu-shitei-nakka-ta.
Mary-TOP	little-lamb-ACC	have-did-not-PAST

‘Mary did not have a little lamb.’
- b. メアリは子羊が芝生を踏みにじらないようお願いをした。

Mary-wa	ko-hitsuji-ga	shibafu-o	fuminijir-anai
Mary-TOP	little-lamb-NOM	meadow-ACC	trample-on

you onegai-o shita.
 way wish-ACC do-PAST
 ‘Mary hopes the little lamb not to trample on the meadow.’

(9) *German*

- a. Maria hat kein Lamm.
 Mary have-3.sg not lamb
 ‘Mary does not have a lamb.’
- b. Maria versucht kein Lamm zu haben.
 Mary try-3.sg not lamb to have
 ‘Mary tries not to have any lamb.’

Meiyou, on the other hand, differs from *not*, *kein* and *nai* significantly in that it cannot appear in non-finite contexts:

- (10) 李四试图不去怨恨。
 Lisi shitu bu/*meiyou qu yuanhen.
 Lisi try not/have.not go hate
 ‘Lisi tries not to hold grudge.’

Based on the data shown above, Li (2016: 39-40) argues *meiyou* is not under NegP but TP (I will extend this issue in Chapter 4 to show that Li’s proposal can be supported by the asymmetrical properties of modal verbs). Li offers three pieces of evidence to justify this proposal: (i) *meiyou* denotes non-future interpretation strictly; (ii) *meiyou* occurs after the event-anchoring (in terms of Enç 1987) adverb *you* ‘again’ (merged above T), while before the non-event-anchoring adverb *zai* ‘again’ (merged below T); (iii) *meiyou* serves to differentiate Cause-*how* (before *meiyou*) and Manner-*how* (after *meiyou*), which are argued by Tsai (2008b) that are located in the left periphery and TP respectively (see 2.3 for a detailed discussion). These three arguments can be embodied by the following examples:

- (11) 他明天没有去学校。
 *Ta mingtian meiyou qu xuexiao.
 he tomorrow have-not go school
 ‘He didn’t go to school tomorrow.’
- (12) a. 李四没有再说话。
 Lisi (*zai) meiyou zai shuohua.
 Lisi again have-not again talk
 ‘Lisi didn’t talk anymore.’
- b. 李四又没有来。
 Lisi you meiyou (*zai) lai.
 Lisi again have-not again talk
 ‘Lisi didn’t show up again.’
- (13) a. 他没有怎么削土豆?
 Ta meiyou zenme xiao tudou.
 he have-not how peel potato
 ‘What is the manner by which he didn’t peel the potatoes?’
- b. 他怎么没有削土豆?
 Ta zenme meiyou xiao tudou.
 he how have-not peel potato
 ‘How come he didn’t peel the potatoes?’

To regularize the facts shown above, Li (2016) thus proposes that TP in Chinese is headed by a phonologically null head \emptyset_{you} which is optionally pronounced when *mei* internally merges to it (I will show in Chapter 5 that it can be pronounced without the merge of *mei*).

Another proponent of Tense in Chinese is N. Huang (2015) who argues Chinese

has syntactic Tense through the investigation of the future-oriented *jiang*, which is argued to be a future-tense morpheme rather than an adverb, modal verb or irrealis marker. His argument based on two facts about *jiang*: (i) *jiang* requires a verbal host, but not a bare nominal predicate, for syntactic well-formedness; (ii) *jiang* cannot occur in the complement of control verbs, suggesting there is a finite/non-finite contrast in Chinese in contrast to Hu et al. (2001). If N. Huang's analysis is correct, it may provide a more intuitive viewpoint that the syntactic Tense of Chinese can be categorially/phonologically realized while mapping to the semantic component (cf. Li's (2016) analysis according to which T head is silent unless being negated). According to N. Huang (2015: 3-4), *jiang* asymmetrically takes a position higher than modal verbs while marking future time without being a modal verb per se. Consider the following:

- (14) a. 玛丽将会有一只小羊。
 Mali jiang hui you yizhi xiaoyang.
 Mary JIANGwill^D have one-CL little-lamb
 'Mary will have a little lamb.'
- b. 玛丽会将有一只小羊。
 *Mali hui jiang you yizhi xiaoyang.
 Mary will^D JIANGhave one-CL little-lamb
 'Mary will have a little lamb.'
- (15) a. 玛丽将不将回德州?
 *Mali jiang-bu-jiang hui Dezhou.
 Mary JIANG-not-JIANG return Texas
 Intended reading: 'Will Mary return to Texas or not?'
- b. 玛丽不将回德州。
 *Mali bu-jiang hui Dezhou.
 Mary not-JIANG return Texas

Intended reading: ‘Mary will not return to Texas.’

c. 玛丽将回德州，约翰也将。

*Mali jiang hui Dezho Yuehan ye jiang.

Mary JIANG return Texas John too JIANG

Intended reading: ‘Mary will return to Texas, and so will John.’

In (14), it is quite clear that *jiang* can precede the modal verb *hui* instead of the other way around. Illustrated by (15), *jiang* fails to occur in A-not-A construction, be negated by *bu*, and license VP-ellipsis, which are assumed to partially constitute the syntactic diagnoses for modal auxiliary verb by Ren (2008: 50)¹⁴. N. Huang also argues *jiang* is not an adverb on the basis of significant difference between *jiang* and generic future-indicating adverbs (see N. Huang (2015: 6-8) for detailed discussion). Crucially, based on the facts demonstrated above, he claims *jiang* is a syntactic Tense morpheme indicating future temporal reference, and in the context of a *jiang*-less sentence, there is assumed to be a phonologically null *non-future* Tense head taking the position. As he admits, this proposal implies that Chinese employs a rather uncommon future vs. non-future distinction that might be of typological interests.

The *jiang*-as-T proposal also shows specific interests with respect to the essential proposal of this dissertation. As briefly mentioned in 1.3, I adopt a clause structure with two Ts, namely T_{superior} and T_{inferior} (cf. 2.2 for detailed discussion). In addition, polysemantic modal verbs are proposed to be obligatory to enter into an Agree relation with a T head to determine its specific meaning. If we follow N. Huang’s hypothesis, a question would arise: which one of the Ts can be realized as *jiang*? My answer is: both.

As I will argue in 2.2 and Chapter 3, *yinggai*, when used as epistemic modal, should raise to T_{superior} or it will block the raising-to-T movement of another

¹⁴ I will argue in Chapter 3 that the compatibility with *bu*-negation as well as the licensing of VP-ellipsis are not the best criteria to identify modal verbs.

polysemantic modal like *yao* if it raises to T_{inferior} (violation to Relativized Minimality), contra the fact. Importantly, despite that the cooccurrence of *jiang* and epistemic *yinggai* is not impeccable, epistemic *yinggai* is favored to precede *jiang* instead of the other way around:

- (16) a. 李四应该将要离开。
 ?Lisi yinggai jiang yao likai.
 Lisi may^E JIANG will^D leave
 ‘Lisi may leave in no time.’
- b. 李四将应该要离开。
 ?*Lisi jiang yinggai yao likai.
 Lisi JIANG may^E will^D leave
 ‘Lisi may leave in no time.’¹⁵
- c. 人类将应该在一亿年后灭绝。
 ?Renlei jiang yinggai zai yiyinian-hou
 humankind JIANG may^E at 100-million-year-after
 miehue.
 extinct
 ‘Humankind might be extinct in 100-million years.’

However, the sequence of *jiang-yinggai* becomes more acceptable with a specific

¹⁵ The sequence of *jiang-yinggai* may be somewhat acceptable with a specific contextual background in which an inanimate subject is involved. Consider (i):

- (i) 人类将应该在一亿年后灭绝。
 Renlei jiang yinggai zai yiyinian-hou miehue.
 humankind JIANG may^E at 100-million-year-after extinct
 ‘Humankind might be extinct in 100-million years.’

In that case, *jiang* may either be T_{superior} or T_{inferior} .

contextual background in which an inanimate subject is involved, as shown by (16c). In that case, *jiang* may either be T_{superior} or T_{inferior}. As will be discussed in Chapter 3, the reason why *jiang-yinggai* is not as good as *yinggai-jiang* may rest on fact that subjective modals are in general disallowed to be scoped by a Scope Bearing Quantifier which is *jiang* in this case, as in (17). On the other hand, *jiang* is allowed to appear either before or after *keneng* which is assumed to take T_{inferior}P (see 1.3) as complement:

- (17) a. 李四将可能要离开。
 Lisi jiang keneng yao likai.
 Lisi JIANG may^E will^D leave
 ‘It will be possible that Lisi will leave.’
- b. 李四可能将要离开。
 Lisi kenengjiang yao likai.
 Lisi may^E JIANG will^D leave
 ‘It is possible that Lisi will leave.’

As preliminarily referred to in 1.3, *keneng* is a monosemic modal verb hence need not to raise to T to value the uninterpretable {uModal} feature. Hence, with the assistance of *yinggai* and *keneng*, it seems appropriate to treat *jiang* as the PF spell-out of both T heads.

Finally, the *jiang-as-T* postulation successfully predicts that there is finite/non-finite distinction in Chinses (*pace* Hu et al. 2001), as *jiang* is not allowed in a non-finite environment:

- (18) a. 他听说玛丽将有一只羊。
 Ta tingshuo [Mali jiang you yizhi yang].
 he hear Mary JIANG have one-CL lamb
 ‘He heard that Mary will have a lamb.’
- b. 他迫使玛丽将离开学校。

*Ta poshi [Mali jiang likai xuexiao].
he force Mary JIANG leave school
'He forces Mary to leave school in the future.'

As suggested in (18), *jiang* can appear in the clause embedded under *tingshuo* 'hear', whereas cannot in one embedded under the control verb *poshi* 'force'.

Some other scholars like Sybesma (2007) and Lin (2015), also doubt the suggestion that Chinese is non-tensed. In particular, Sybesma (2007) argues that there are two good reasons why there must be a T node in Chinese: (i) A massive amount of research has achieved many successful outcomes with the postulation of T, and if we claim Chinese is an idiosyncratic language, it will inevitably require multiple theoretical apparatus to cover the productive works that are attributed to T, which is not a valid move in regard to minimalist considerations. (ii) Sentences without any aspect markers or adverbial phrases are normally interpreted as present tense; where then does such an interpretation come from? Consider (19).

(19) 我看你不是好人。
Wo kan ni bushi haoren.
I look you not-be good-person
'I don't think you are a good person.'

As argued above, even if there might be a way to explain this question without resorting to a T node (say, stipulating that Chinese "bare" sentences express present reading by default), I would like to pursue a formal approach that may account for the interpretation of the sentence like (19) with the device of T head in the remainder of this section.

Interestingly, as observed by Sybesma, the interpretation of past tense in Dutch is quite similar to Chinese, despite the verb in Dutch being morphologically marked as past tense (Dutch sentences are extracted from Sybesma 2007).

).

- (20) a. #Ik woonde in Utrecht.
I live in Utrecht
'I lived in Utrecht.'
- b. Ik woonde in 1993 in Utrecht.
I live in 1993 in Utrecht
'I lived in Utrecht in 1993.'
- (21) a. 我住在成都。
#Wo zhu zai Chengdu.
I live at Chengdu
'I lived in Chengdu.'
- b. 我1993年住在成都。
Wo 1993 nian zhu zai Chengdu.
I 1993 year live at Chengdu
'I lived in Chengdu in 1993.'

Consider (20a) and (21a) in Dutch and Chinese, respectively. Note that (20a) can hardly have a past tense interpretation even when the verb is in the past tense form. (20a) can only be good with the adjunction of *in 1993*. Likewise, the Chinese counterparts of the Dutch sentences in (21) tell the same story, that bare verb phrases without temporal adverbs cannot be interpreted as past. Sybesma (2007) thus argues that the past-tense-morpheme of Dutch is no more than a morpheme of agreement, and has nothing to do with tense. In effect, the past tense interpretations of both languages originate in the agreement of temporal adverbs and T. What differentiates Chinese from Dutch here is that such agreement takes place covertly in Chinese, while overtly in Dutch.

Lin (2015) provides evidence for the existence of T in Chinese with respect to the sensitivity of some syntactic operations to the finiteness of a clause. First, Object

Fronting is only possible in a finite clause. For example, assumed to be a kind of object fronting, passivization in Chinese triggers A/A'-movement of object (cf. Huang 2009).

- (22) 母鸡被狗吃了。
 Muji bei gou chi-le ti.
 hen PASS dog eat-ASP
 'The hen is eaten by the dog.'
- (23) a. 屠夫逼母鸡被狗吃了。
 *Tufu bi muji bei gou chi-le ti.
 butcher force hen PASS dog eat-ASP
 'The butcher forced the hen to be eaten by the dog.'
- b. 屠夫强行让母鸡被狗吃了。
 Tufu qiangxing-rang muji bei gou chi-le ti.
 butcher by-force-make hen PASS dog eat-ASP
 'The butcher forced the hen to be eaten by the dog.'
- c. 屠夫让母鸡下了三个蛋。
 Tufu rang [muji xia-le sange dan].
 butcher make hen lay-ASP three-CL egg
 'The butcher made the hen to lay three eggs.'

The complement clause of control verb *bi* 'force' is arguably non-finite; hence the fronting of object is barred. Notice that (23a) would be grammatical if we replace *bi* with *qiangxing rang* 'make...by force', meaning that the ungrammaticality of (23a) has nothing to do with semantic mismatching. Meanwhile, unlike *make* in English taking small clause as complement, *rang*, as demonstrated in (23c), takes a full CP as its complement since the embedded verb can be marked by aspect markers.

Second, as pointed out by Lin (2015), the scopes of quantifiers may be sensitive to finiteness as well in line with Huang's (1982) Isomorphic Principle, which says that the c-commanding relation between two syntactic objects at overt syntax obtains at LF.

In other words, the object in (24) cannot be interpreted as taking wider scope than the subject.

- (24) 一位作家批评了每一部小说。
 Yiwei zuojia piping-le meiyibu xiaoshuo.
 one-CL writer criticize-ASP every-CL novel
 ‘There is one author who criticized every novel.’
 ‘ $(\exists > \forall)$ ’

On the other hand, once (24) is embedded in a non-finite-clause-taking verb phrase, such a matching relation disappears. The c-commanded object can in turn take a wider scope.

- (25) 他逼一位作家批评每一部小说。
 Ta bi yiwei zuojia piping meiyibu xiaoshuo.
 he force one-CL writer criticize every-CL novel
 ‘He forces one author to criticize every novel.’
 ‘ $(\exists > \forall), (\forall > \exists)$ ’

Tsai (2008a: 7) also points out a functional head T plays a vital role in implement tense anchoring in morpho-syntactic terms. He implies that although T in Chinese is probably ‘in a pretty weak form’ and cannot introduce event variable (see Parson 1990) by itself, syntactic tense can still be mapped to semantic tense in by other representational means like *Event quantification* and *Event modification*, etc. Particularly, besides these representational means for tense anchoring, he additionally proposes that it could also be carried out derivationally, which relies on Asp-to-T raising. I will discuss the possibility of unifying the ‘T is in a pretty weak form’ description and the labelability of T head in Chinese in 2.1.1.

In this dissertation, therefore, I assume the existence of the T node in Chinese. In addition to the evidence given in Sybesma (2007), N. Huang (2015), Lin (2015) and Li (2016), I now present additional materials, with which their stances can be enhanced.

According to Stassen’s (1997) Past Condition, a tensed language must have certain verbal forms that exclusively denote past tense, for otherwise this language should be classified as non-tensed.¹⁶ I argue that the compound “aspectual marker” *-guole* indeed plays the role of past tense marker, and consequently the contrast of present/past tense can be established. Consider the particles of Chinese such as *-le*, *-zhe*, *-zai*, all of which can be used to mark present interpretation, whereas *-guole* is strictly restrained to past.

- (26) 璐璐现在已经吃了两只鸭了。
 Lulu xianzai yijing chi-le liangzhi ya le.
 Lulu now already eat-ASP two-CL duck ASP
 ‘Now, Lulu has already eaten two ducks (still eating at utterance time).’
- (27) 璐璐现在在做饭，石头在淘米。
 Lulu xianzai zai zuofan, Shitou zai tao mi.
 Lulu now ASP cooking Shitou ASP wash rice
 ‘At present time, Lulu is cooking, while Shitou is washing the rice.’
- (28) 璐璐现在盯着他看。
 Lulu xianzai ding-zhe ta kan.

¹⁶ ‘ed’-affixed words in English seem to be multi-functional, since they can be construed as an indicator of Past Tense, Past Participle, and Passive. However, the multi-functionalization in question can be attributed to the historical phonetic change. Let us take *libbban* in Old English, which means *to live*, for instance. In fact, it has different forms of past tense and past participle, i.e., *lifde* and *lifd*. Hence, it is unwarranted to see *-ed* as an exception to Stassen’s (1997) generalization.

- Lulu now stare-ASP he look
 ‘Now, Lulu is staring at him.’
 (29) 璐璐现在吃过了午饭。
 *Lulu xianzai chi-guole wufan.
 Lulu now eat-PAST lunch
 ‘Now, Lulu had lunch.’

As demonstrated by (29), the appearance of *xianzai* ‘now’ is prohibited when the verb is affixed by *-guole*, suggesting there is a way to denote past tense exclusively. In contrast, other aspect particles suit the adverb *xianzai* ‘now’ perfectly, including *-le*, which is generally assumed to be the perfective marker of Chinese.

In Klein, Li, and Hendricks (2000), *-guo*, when used alone (called a discontinuity particle indicating the experience of a certain event by Smith 1991), though often occurring in past time, is not associated with past tense by itself because it may indicate a futural possibility of experiencing a certain event. Their claim about *-guo*, however, seems dubious because they have not given any examples to defend it. Though *-guo* is canonically taken to imply that a given event was experienced at least once at an indefinite past timepoint, it also suffices to provide a specific time-reference, which is an essential property of past tense.

- (30) 1998年这里遭过洪水。
 1998 nian zheli zao-guo hongshui.
 1998 year here encounter-ASP flood
 ‘This place was flooded in 1998.’
 (31) a. Yesterday, I went to the park.
 b. *Yesterday, I have gone to the park.

Through the comparison of (30) and (31), it is clear that *-guo* in (30) is associated with simple past tense instead of Experience. Being a native speaker of Mandarin

Chinese myself, I find it quite unlikely for *-guo* to indicate futural possibility, contra Klein, Li, and Hendricks' (2000) assertion.

Additionally, apart from *-guole*, it is suggested in Paul and Whitman (2008) that *de* in *shi...de* cleft focus construction associated with past tense, thus it should be analyzed to be a past tense morpheme.

- (32) 就是他 (*已经) 喝的水。
 Jiu shi ta (*yijing) he-de shui.
 then be he already drink-PAST water
 'It was him who drank water'

- (33) 就是他 (已经) 喝了一壶水。
 Jiu shi ta (yijing) he-le yihu shui.
 then be he already drink-ASP one-CL water
 'It is him who has already drunk a whole jar of water.'

It is made very clear in (32-33) that *de*-affixed verb cannot be modified by an aspectual adverb, since a past-tensed verb can only indicate a specific timepoint. The asymmetry among *-le*, *-guole* and *-de* with respect to Relative Clause (RC) further indicates that Chinese accommodates syntactic morphemes to denote semantic tenses. Consider RCs in (34):

- (34) a. 那是我昨天玩的游戏。
 Na shi wo (zuotian) wan de youxi.
 that be I yesterday play C game
 'That is the game I played yesterday.'
- b. 那是我昨天玩过了的游戏。
 ?Na shi wo (zuotian) wan-guole de youxi
 that be I yesterday play-ASP C game
 'That is the game I played yesterday.'

- c. 那是我昨天玩了的游戏。
 *Na shi wo zuotian wan-le de youxi.
 that be I yesterday play-ASP C game
 ‘That is the game I played yesterday.’

De in RC is often analyzed as the COMP head of the embedded clause (see Aoun and Li 2003; and Simpson 2002 for *Weak Determiner* analysis), and I set aside the question whether it is the same morpheme as the past-tense *-de*. In (34a-b), the appearance of the temporal adverb *zuotian* is optional, as the event will be interpreted with simple past tense regardless it appears or not. By contrast, despite being perfectly acceptable when generated as a matrix clause, the relativized clause in (34c) is hardly acceptable. The contrast shown above seems to suggest there is a distinction between overtly marked tenses and covertly (in semantic components) marked ones, as although (34a-c) denote past temporal reference uniformly, they do not behave the same in the formal component (*pace* J-W. Lin 2010 which argues that past tense in Chinese can be deduced from perfectivity, hence there is no need to posit T).

On the basis of the observation in (34), it is reasonable to assume that besides \emptyset_{you} and *jiang* discussed above, there are at least two ways to indicate past tense in Chinese with the assistance of syntactic morphemes. Therefore, the postulation of T head seems plausible and necessary.

2.1.1 The Labelability of TP in Chinese

Chomsky (2013) assumes that the $\langle \varphi, \varphi \rangle$ labeling for TP must be determined in the so-called SPEC-Head agreement, which is on account of the revival of the strong/weak parameter imposed on T (and R). That is, T in English is too weak to serve as a label, whereas languages like Italian with rich morphological agreement would be associated with a strong T that is capable of being a label independently. This strong/weak parameter suffers from many problems as discussed in Goto (2017),

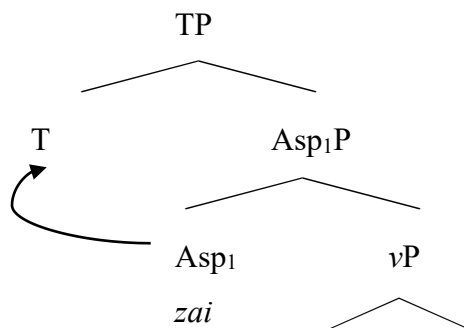
Hayashi (2020) and Murphy and Shim (2020)

In addition, I think that T and R are very different syntactic objects and there needs more explanation in regard to why they are subject to the same constrain. In the case of R, Chomsky (2013, 2015) takes it as a pure semantic root without category-specification. On the other hand, T, although not as feature-enriched as other heads, still has tense/agreement features (Murphy and Shim 2020: footnote 4 thus claim it is unwarranted to eliminate T). Following the description of T in Ke (2021: 2), T would then be no different from other heads if we see heads as bundles of feature.

Therefore, differs from the standard approach to TP-labeling, I follow Goto's (2017) conclusion in assuming T heads are universally weak, and that Chinese T may be strengthened by either the raising of Asp head or the raising of modal verbs. As mentioned above, Tsai proposes that Asp-to-T is a possible way for tense anchoring, which can be well reiterated a possible way to strength the 'T in pretty weak form'. To illustrate it, let us consider the following sentence with a single aspect marker without the so call 'incompleteness'.

- (35) a. 我在睡觉。
 Wo zai shuijiao.
 I ASP sleep
 'I am sleeping.'

b. *Asp-to-T raising*

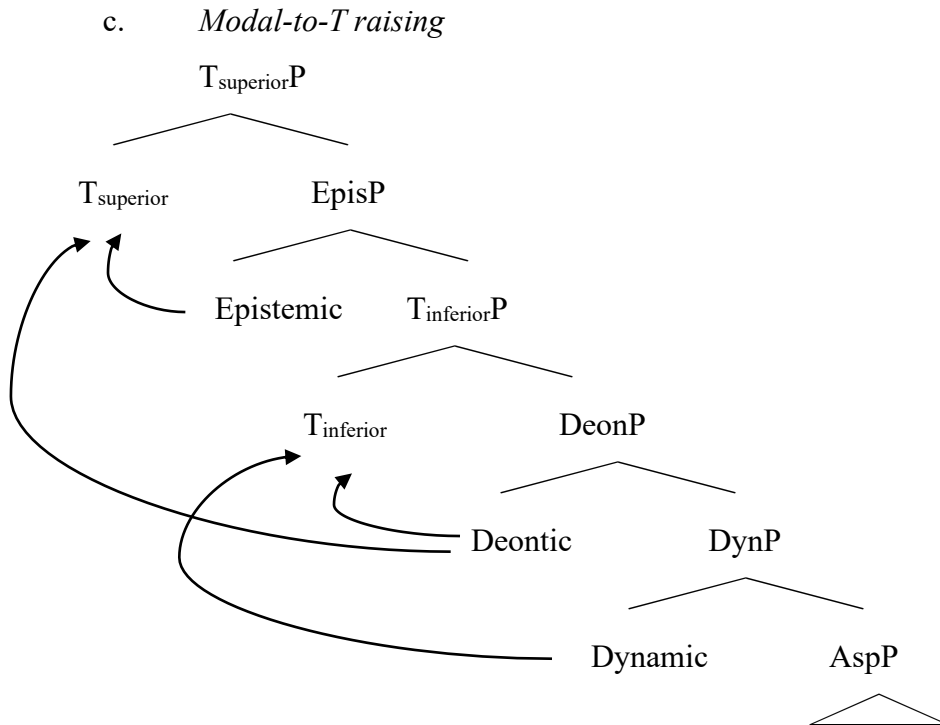


Here one may wonder how is the T in (35b) correctly strengthened, since the raising

of aspect head ends up having *zai* adjoined to T instead of internally merged to [SPEC, T]. In Miyagawa (2001: 39), an idea is proposed to account for the fact that why Japanese *wh*-words stay in-situ: that the Q-particle in Japanese occurring on COMP satisfies the EPP feature of the later, thus no *wh*-movement is needed. This idea is reinterpreted in Miyagawa, Wu and Koizumi (2019: 5) by suggesting Q-particle in Japanese suffices to make COMP project without the support of a specifier (hence termed Projection/Labeling inducer). I consider this analysis extendable to Chinese data as well, that the T head in (35) can be strengthened by the raising of aspect marker of Asp₁P. As a result, the T head in question would no longer be in ‘pretty weak form’ and may serve as a label independently.

Similar mechanism is applied in the case of modal verbs. Nevertheless, there would be slightly more complexity since there can be multiple occurrences of modal verbs (detailed discussion will be unfold in Chapter 3 and 4). The Modal-to-T raising may be depicted as follows based on the Split-T schema mapped in 1.3.

- (36) a. 他应该可以抽烟。
 Ta yinggai keyi chouyan.
 he may^E can^D smoke
 ‘It is possible that he is allowed to smoke.’
- b. 士兵 (*应该) 要敢保卫祖国。
 Shibing (*yinggai) yao gan baowei zuguo.
 guitarist may^E can^D can^{Dy} defend motherland
 Intended reading: ‘It is possible that soldiers are supposed to dare protect the country.’



As illustrated in (36a-b), it seems that the ungrammaticality of (36b) is triggered by too many modal verb occurrences. In the epistemic-root sequence like (36a), I argue the epistemic *yinggai* and deontic *keyi* raise to T_{superior} and T_{inferior} respectively not only to acquire the intended semantic interpretation, but also to make it possible for them to serve as a label (see Chapter 4 for a more detailed mechanism)¹⁷. There is no looking-ahead conditions dictating which modal verb should go to which T head. As

¹⁷It is unclear whether subjects in Chinese can play such a role as its English counterparts. First, as opposite to languages with rich morphological agreement, Chinese is arguably an agreement-less language. For such reason, it would be hard to determine what is the label of the TP in which subjects appear. One can assume the subject moves out (to TopP for example) to avoid the Problem of Projection by breaking off the {XP, YP} configuration, but since T head is assumed to be weak in this thesis, it will still require to be strengthened by other operations. Alternatively, as suggested in Yang and Lin (2020), a plausible labeling strategy is proposed for Chinese TP by using semantic attribute [Specific]. If their analysis is defensible, we may label Chinese TP as <SPE, SPE>.

long as the Relativized Minimality (see Rizzi 1991, 2004) is not violated, a modal verb can raise to either T_{superior} or T_{inferior} . I will show in the remainder of this Chapter that assuming Epistemic modals and Root modals raise to T_{superior} and T_{inferior} can avoid the problem of undergeneration.

The raising of modal verbs to T heads not only renders T heads available for labeling, but also enables the feature valuation in a pretty local way. In that, the inherently unvalued features embedded in modal verbs which give rise to the polysemantic nature of them would be valued.

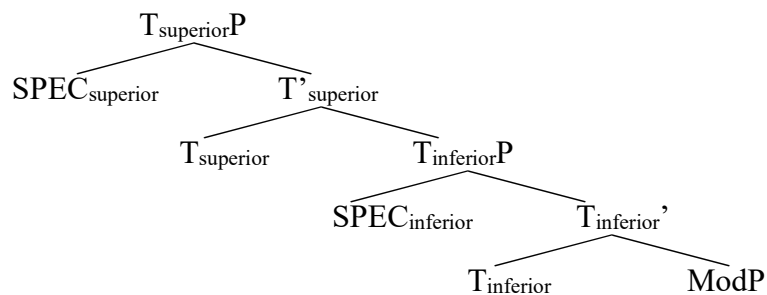
2.2 The Split-T Construction

In this section, I will highlight some basic settings of the Split-T structure which I tentatively assumed in 1.3 and 2.1.1 by presenting some empirical evidence supporting the idea that there are two independent functional heads within one sentence that encodes the temporal references. Hereby, some of the most important properties of modal verbs can be sorted out. I will also give a brief discussion concerning the Complementizer layer in the sense of Rizzi (1997)

The Split-T hypothesis comes directly from the phenomenon that there may be two functional words within one sentence taking on temporal references. Enlightened by Pollock's (1989) Split-Infl analysis, the T head in Chinese is assumed to be divided into T_{superior} and T_{inferior} (as already presented in 1.3 and 2.2.1); as a result, a double Asp sentence like (37) would be assigned a structure like (38).

- (37) 我吃过披萨了。
 Wo chi-guo pisa le.
 I go-ASP pizza ASP
 'I ate some pizza.'

(38) *Split-T configuration*



T_{superior} and T_{inferior} hold space for sentential-*le* and verbal-*guo*, respectively¹⁸. Although sentential-*le* in (37) is often assumed to be an Inchoative/Focus particle (see Soh and Gao 2006, Zhang 2018, Wang 2019 among many others) and should generally be analyzed as located in left periphery. Interestingly, -*guo* and -*le* in (37) may affect the temporal reading separately since if either of them is missing, the temporal reference would alter. Consider (39):

- (39) a. 我吃过披萨。
 Wo chi-guo pisa.
 I eat-ASP pizza
 ‘(In a non-specific past time) I once ate a meal.’
- b. 我吃披萨了。
 Wo chi pisa le.
 I eat he-home ASP
 Reading a: ‘I’ve eaten a pizza.’
 Reading b: ‘(As to now), I am about to go to eat a pizza.’
- c. 我吃了三枚披萨了。
 Wo chi-le sanmei pisa le.

¹⁸ This assumption is inspired by the Asp-to-T movement proposed by Wu (2002) and Tsai (2008a).

I eat-ASP three-CL pizza ASP

‘I have eaten three pizzas (still eating).’

As illustrated in (39a-b), the absence of either verbal-*guo* or sentential-*le* will cause the alternation of temporal reference. In (39c), where two *-les* appear simultaneously, there emerges a two-fold temporal content: Perfectivity and Progressive. I will return to this issue in 2.3, where I will argue that sentential-*le* can be analyzed as base-generated in T_{superior} which undergoes raising to the left periphery to realize its beyond-TP functions. The intuitive motive for this argument lies in the fact that with the appearance of sentential-*le*, the Experiential reading encoded by *-guo* in (37) will be overridden. Sentential-*le*, in such case, is also responsible for the simple past tense reading other than the Inchoativity.

Note that sentential-*le* in (39b) may express both perfectivity and inchoativeness, while there are sentential-*les* that indicating simple past tense or perfectivity:

(40) a. 李四喝酒了。

Lisi he jiu le.

Lisi drink wine ASP

‘Lisi has drunk some wine.’

b. 李四五点左右喝酒了。

Lisi wudian zuoyou he jiu le.

Lisi five-clock around drink wine ASP

‘Lisi drank some wine at 5 o’clock.’

Wang (2018) argues that the sentential-*le* in (40) is in fact a verbal-*le*, so what happens here is that the VP *hejiu* ‘drink wine’ is fronted to the so-called ‘specifier of AspQP’ [Aspect of Quantity]. He also makes a proposal regarding why a verbal-*le* is shifted to the last slot. Namely, the VP in such clauses is fronted to a position higher than the head of AspQP, i.e., *-le*. Wang's work correctly captures the fact that (40a-b) have basically identical interpretations to their verbal-*le* counterparts. In this thesis, I argue the same empirical

coverage can be attained by introducing two T heads without treating verbal-*le* and sentential-*le* in such clauses as the same head (because they do not always behave identically). Importantly, sentential-*le* denoting perfectivity does not sound ‘incomplete’ even in the absence of a verbal-*le*, which means it can anchor the tense independently (incompleteness is marked with #).

- (41) a. #他喝了酒。
 #Ta he-le jiu.
 you drink-ASP wine
 ‘He has drunk some wine.’
- b. 他喝酒了。
 Ta he jiu le.
 he drink wine ASP
 ‘He has drunk some wine.’

Based on the observation above, it seems reasonable to conclude that sentential-*le* is something located in the position of T_{superior} and if one assumes sentential-*le* to be a particle base-generated in C domain, it would be difficult to explain how the tense-anchoring is executed in (41b)¹⁹.

The idea that there are two T heads in one sentence further provides us with a quite uniform way to regularize some essential properties of modal verb system in Chinese. First,

¹⁹ Tsai (2008a: 685) claims that sentential-*le* helps verbal-*le* in anchoring the tense by provoking the implicit event variable on the basis of its inchoative nature, as double-*le* sentences do not sound incomplete. However, as shown in (41b), sentential-*le* is able to anchor the tense on its own.

In addition, sentential-*le* in (41b) does not seem to give rise to an inchoative reading unless two -*les* are both in presence which strongly suggests sentential-*le* can be located at a T head to anchor the tense. The fact that sentential-*le* appears at a different position from -*guo*, which is assumed by Tsai to be raised to T aiming tense anchoring, suggests that there are two T heads located in distinct positions. As to the situation where an inchoative reading is intended, sentential-*le* can be taken to be merged into C domain.

following Pollock (1989), which argues that English auxiliaries raise to T, and the reason why there can be two finite modal verbs in one clause becomes clear: because Chinese employs two T heads in one clause. As shown in (42), as long as the deontic-dynamic sequential order is held (see Tsai 2015: 15), two occurrences of modal verbs are permitted:

- (42) a. 你要敢开车。
 Ni yao gan kaiche.
 you will^D dare^{Dy} drive
 ‘You are supposed to have the courage to drive.’
- b. 你敢要开车。
 *Ni gan yao kaiche.
 you dare^{Dy} will^D drive
- c. 你要会开车。
 Ni yao hui kaiche.
 you will^D dare^{Dy} drive
 ‘You are supposed to be able to drive.’
- d. 他会要开车。
 *Ta hui yao kaiche.
 he can^{Dy} will^D drive

The Deontic-Dynamic sequence in (42a) is grammatical, whereas it becomes unacceptable if the monosemic *gan* comes before the deontic *yao*, as in (46b). It is not surprising since it not only violates that deontic-dynamic sequential order, but also goes against the concept of Relativized Minimality (see Rizzi 1990, 2004), that *gan* must raise to T_{superior} across another modal verb that acquires its specific meaning through the Agree with T_{inferior} to generate the surface order. This observation can also be extended to the scenario in which there are two polysemantic modal verbs, as in (42c-d). Recall that the deontic *yao* in (42c) needs to raise to a T to specify its meaning, however *hui* right to *yao* is polysemantic

as well. In order to avoid the General Head Constraint (GHC) formulated in Harwood (2014: 9), which basically requires that one head can only be occupied by one morphological word *à la* Chomsky (1986), Baker (1988) and Rizzi (1990), and to derive the correct word order, the deontic *yao* must move cyclically to T_{superior} in the form of Deontic>T_{inferior}>T_{superior} before *hui* raises to T_{inferior}²⁰²¹. In other words, our Split-T approach is able to map out the hierarchical relation between epistemic, deontic and dynamic modals which is still held after they go through the Agree operation. Notably, if our Agree-determines-meaning analysis is on the right track, the introduction of two T heads would be inevitable. And if there is only one T head, it would incur the violation to GHC constraint. I will discuss the cooccurrence of modal verbs thoroughly in Chapter 4.

Second, the proposed Split-T construction differs slightly from the hierarchy normally proposed for English with respect to the complement of modal verbs. It is proposed in Rizzi (1997:327) that the (non-)finiteness of a clause hinges on the head of FinP in Complementizer layer, and if its head Fin is specified as {-Fin} this FinP will be spelled out as a nonfinite clause. Then, how about the complement of modal verbs? For example, it is implied in

²⁰ Such lexical head-functional head-functional head movement seem valid as argued in Tsai (2008a: footnote 6) that this conforms to the chain uniformity condition proposed in Chomsky (1993).

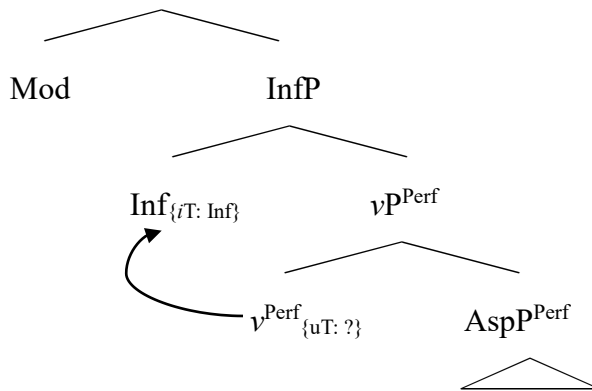
²¹ Another piece of evidence in support of our analysis is that although a sentence with three occurrences of modal verbs is generally unacceptable, the grammaticality would improve if there is monosemic word involved:

- (i) 你应该要敢开车。
 *Ni yinggai yao gan kaiche (cai xing).
 you may^E will^D dare^{Dy} drive then good
- (ii) 你可能要会开车。
 ?Ni keneng yao gan kaiche (cai xing).
 you may^E will^D dare^{Dy} drive then good
 'It is possible that you are supposed to be brave enough to drive.'

The reason why (ii) is more acceptable than (i) could be that *keneng* is a monosemic modal verbs which then does not need to Agree with T heads. Therefore, there is still space for the rest modal verbs to raise to T heads.

Harwood (2014: 9) that modal auxiliaries select Inf(initive)P as their complement whose head Inf⁰ bears {iT: Inf} inherently. Hence, whatever adjoins to this head would be marked as non-finite:

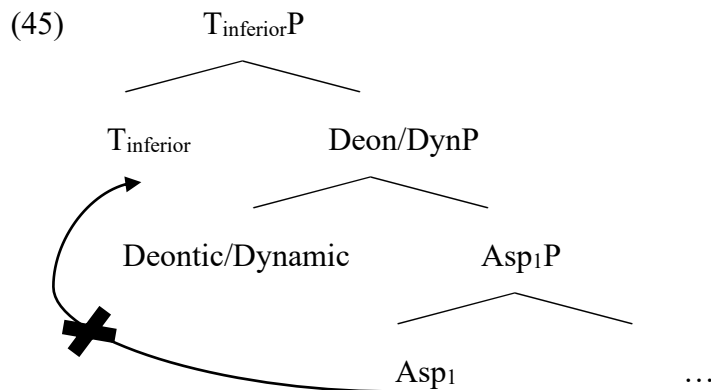
(43) ModP (extracted from Harwood (2014: 32) with slight modification)



According to Harwood, with v^{Perf} raised to Inf, the uninterpretable feature may then be valued and Inf⁰ will eventually be externalized as *have*. In the case of Chinese, however, we do not have to introduce a lexically empty head like Inf⁰ to encode the non-finiteness of the complement of modal verbs if the Split-T construction is adopted. Consider (44):

- (44) a. 他可以吃了肉。
 *Ta keyi chi-le rou.
 he can^D eat-ASP meat
- b. 他要吃了肉。
 *Ta yao chi-le rou.
 he will^{Dy} eat-ASP meat
- c. 他可能吃了肉。
 Ta keneng chi-le rou.
 he may^E eat-ASP meat
 ‘He might have eaten some meat.’

(44a-b) being ungrammatical parallels English data that no sequence like *can eaten* or *will eaten* is licit. It is discussed in 2.1 that aspect markers are required to move to T. Note that with the appearance of DynP or DeonP, the fact that the raising of Asp is blocked immediately leads to the conclusion that root modal verbs must take a bare verbal complement (see Tsai 2015: 19 for a similar argument).



Before I end this section, it is necessary to pay attention to the *raising-or-control* distinction. In Ross (1969), epistemic modals are analyzed as intransitives assigning only one theta-role to their non-finite complement, whereas root modals are assumed to be transitives that assign an additional theta-role to their subjects. This distinction can be well captured by implementing the raising/control configurations, as illustrated below.

(46) *Epistemic modals as Raising Structure*

[Epis...Subject←θ←Inf-v]

(47) *Root modals as Control Structure*

[Subject←θ←Root...PRO←θ←Inf-v]

The distinction shown above, however, is not approved in Wurmbrand (1999) in which she argues that modal verbs, epistemic or root, are all represented by raising structure.

Wurmbrand presents some insightful observations that the surface subject of root modals is originated in lower vP. For example, root modal can not only take expletives as subject, but also exempt the passivization of the internal argument. Consider (48-49):

- (48) There may^D be a party for him.
(49) a. The glacier may^D be blown up.
 b. *The glacier tried to be blown up.

Suggested by (48), the associate actually positions inside the non-finite complement of the deontic modal *may*, thus it is plausible to conclude that the surface subject in such case would raise to the leftmost position rather than externally merge to it. Similarly, illustrated in (49), contra the control verb *try*, an inanimate inner object can be passivized in the case of (49a). Wurmbrand (1999: 8) argues that the subject is not related to either permission or obligation, the thematic-related content assigned by *may*, hence the only valid analysis is to assume (49a) a raising structure as well.

Interestingly, Wurmbrand's conclusion is also applicable to Chinese modal verbs. As I have discussed in 1.3 that the subject of Chinese root modals can be inanimate object which is not subject to Permission or Obligation, repeated as (50).

- (50) 这里可以抽烟。
 Zheli keyi chouyan.
 Here may^D smoke
 ‘One is allowed to smoke here.’

Additionally, the passivization of the internal argument is also legit, as shown in (51):

- (51) 冰川可以被爆破。
 Bingchuan keyi bei baopo.
 glacier may^D PASS blow-up

‘The glacier can be blown up.’

The whole picture would get blurred once we shift the focus to dynamic modals. Wurmbrand (1999: footnote 2) admits that dynamic modals need different treatment. The reason is obvious, neither expletive subjects nor the passivization internal arguments are allowed. And this observation is true of both English and Chinese:

- (52) a. *There can^{Dy} throw a party.
b. *The glacier can^{Dy} be blown up.
- (53) a. 这里敢抽烟。
*Zheli gan chouyan
here dare^{Dy} smoke
- b. 冰川肯被爆破。
*Bingchuan ken^{Dy} bei baopo.
glacier will^{Dy} PASSIVE blow up
- c. 冬天要吃白菜。
Dongtian yao chi baicai.
winter will^D eat Chinese cabbage
‘One is supposed to eat some Chinese cabbage in winter.’
- d. 冬天要吃白菜。
*Dongtian yao chi baicai.
winter will^{Dy} eat Chinese cabbage
Intended reading: ‘One is willing to eat some Chinese cabbage in winter.’

(53a-b) indicate that the subject of dynamic modals is related to them thematically, since it is impossible for an inanimate object to have willingness. (53c-d), on the other hand, show that only if the polysemantic modal verb is interpreted as deontic can the sentence be acceptable. In all, dynamic modals are better analyzed to employ control structure (see Hu

and Shen 2020 for a similar conclusion).

2.3 Mapping the left periphery

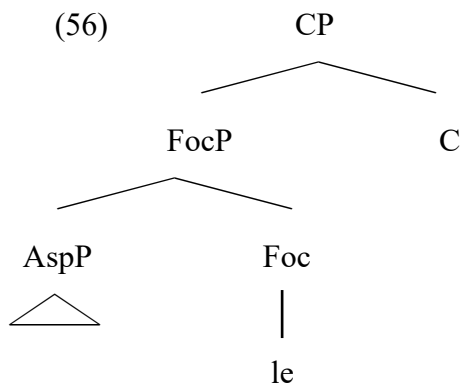
In this section, I turn my focus to the fine left periphery of Chinese. The immediate motive is to formulate an articulated C domain that may then provide us with theoretical background when dealing with some important traits of Epistemic modal verbs.

In 2.1, sentential-*le* is argued to be able to function as an Asp head that indicates simple temporal reference. Meanwhile, there are several specialties distinguishing it from its verbal equivalent. To illustrate it, let us consider the following examples:

- (54) a. 他去了日本。
Ta qu-le Riben.
he go-ASP Japan
'He went to Japan.'
- b. 他去日本了。
Ta qu Riben le.
he go Japan ASP
'He went to Japan (which is a news to speakers).'
- (55) a. 你刚才犯错了。
Ni gangcai fan cuo le.
you just-now miss error ASP
'You just made a mistaken.'
- b. 你刚才犯了错。
Ni gangcai fan-le cuo.
you just-now miss-ASP error
'You just made a mistaken.'

Despite that in certain situations (like ones in (55)) verbal-*le* and sentential-*le* may resemble each other with respect to temporal interpretation and pragmatic implications, it is very clear that the specific locus of -*le* is non-trivial concerning the interpretation of the entire utterance, because the interpretation would vary according to where it appears in other situations. In (54b), the sentential-*le* clearly encodes inchoativity, which, as suggested in Tsai (2008a: 678), should be analyzed as a head located in the left periphery in the sense of Rizzi (1997), whereas the -*le* in (54a) arguably lingers within the TP layer.

Wang (2018: 170) argues that sentential-*le* is a Focus marker since it typically signals a new assertion which is opposite to the present presupposition. Following his proposal, the sentential-*le* clause in (54b) would have an underlying ‘*It is not the case that he didn’t go to Japan*’, and the structure for sentential-*le* may be outlined by (56)²²:



On the contrary, Erlewine (2017) proposes a sentential-*le* clause-internal analysis,

²² It seems that this structure proposed in Wang (2018) may conflict with Tsai’s (2008) Asp-to-T tense anchoring analysis considering it is not clear whether sentential-*le* is allowed to engage successive movement. I assume there is a possibility for sentential-*le* to move to FocP after raised to T. First, although verbal-*le* must be morphologically fused with the verb stem, sentential-*le* is a free/independent morpheme. Therefore, there is no a priori principle banning it from doing so. Second, recall T heads are assumed to be weak in 2.1.1 and the raising of *le* may support them as independent heads. Note that *le* does not adjoin to the SPEC of T, a Criterial Position (see Rizzi 2016) As a result, sentential-*le* moving to Focus is compatible with the theoretical considerations of this thesis.

arguing that sentential-*le* is sister to the predicate and cannot take scope over the subject. His argument is based on the contrast depicted in (57-58) in which the subject *wh*-word does not get an indefinite reading, whereas the object *wh*-word does.²³

- (57) 谁说话了。
 *Shei shuohua le.
 who talk ASP
 Intended reading: ‘Someone has spoken something.’
- (58) 有人看见什么了。
 Youren kanjian shenme le.
 have-person see what ASP
 ‘Someone has seen something.’

In the ground of conception, the clause-internal analysis of sentential-*le* amounts to saying that there is a one-membered unique functional category taking a specific position in Chinese, which, in the view of theoretical optimality, is somehow costly. The empirical coverage shown by (57-58) does not seem to hold as well, as Zhang (2018) points out, when we replace *shei* in (57) for *shenme-ren*.

- (59) 什么人说话了。
 Shenme-ren shuohua-le.
 what-person talk-ASP
 ‘Someone has spoken.’
- (60) 他爱上谁了。
 *Ta aishang shei le.
 he fall-in-love who ASP

²³ Li (1992) observes that *wh*-words in Chinese can have an indefinite reading when sentential-*le* is present.

Intended reading: ‘He has fallen in love with someone.’

Sentential-*le* takes scope over the subject *wh*-word in (59) since *shenme-ren* is interpreted as an indefinite nominal instead of interrogative. In (60), it is clear that the *wh*-word object *shei* fails to have an indefinite reading, contra the predication that *-le* only licenses the indefinite reading of a *wh*-object. Thus, Erlewine’s (2017) analysis seems to rule in undesirable results and rule out correct ones simultaneously.

Zhang (2018) implicitly suggests that the contrast between (57) and (58) lies in the lexical traits of *shei* and *shenme-ren*, however, as demonstrated in (61), subject *wh*-word can have indefinite reading:

- (61) 如果谁看见他了。
Ruguo (you) shei kanjian ta le...
if have who see he ASP
‘If there is anyone who sees him...’

Within a conditional clause where the helping word *you* ‘have’ is optionally embedded, *shei*, which is assumed to be a *wh*-word that cannot be licensed with an indefinite reading, is interpreted as ‘anyone’ in (61). This observation can be correctly accounted for by Tsai’s (1999) Unselective Binding analysis for Chinese *wh*-words (argued to be indefinites per se). Following Heim (1982) who assumes that conditional operators have universal quantificational force inherently, the ‘anyone’ interpretation of *shei* in (61) may then come from the unselective binding of Op_{\forall} .

In other words, contrary to Zhang’s analysis, subject *shei* is not intrinsically infelicitous for an indefinite reading. Accordingly, I argue that the ungrammaticality of (57) and (60) may then be attributed to the phonetic nature of *shei*. It seems that monosyllabic *wh*-words can hardly be interpreted as indefinite in Chinese without additional supports (conditional, Q-particles or *you*-attachment for example). Once prefixed by *you*, on the other hand, the indefinite reading of *shei* persists because *you-shei* is disyllabic. Consider the clause in (62),

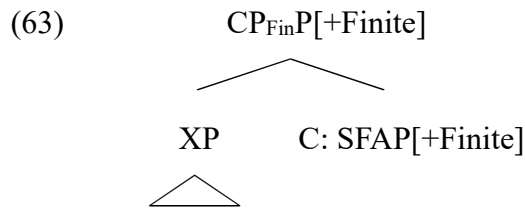
where *sha* ‘what’, often used in spoken Chinese in Northern China, cannot be construed as indefinite as either the subject or the object even with the occurrence of sentential-*le*, whereas such an interpretation becomes tenable with the helping words *you* ‘have’ and *xie* ‘some’.

- (62) a. 他干啥了?
 *Ta gan sha le.
 He do what ASP
 Intended reading: ‘He has done something.’
- b. 啥坏了?
 *Sha huai le.
 What break ASP
 Intended reading: ‘Something is broken.’
- c. 有啥东西臭了。
 Yousha dongxi chou le.
 Have-what thing stink ASP
 ‘Something has got stinky.’
- d. 我听见些啥了。
 Wo tingjian xie-sha le.
 I hear some-what ASP
 ‘I heard something.’

The only possible readings of (62a–b) must be interrogative, no matter whether *sha* is subject or object. However, in (62c–d), as long as the *wh*-word *sha* is rendered disyllabic, it must be construed as indefinite. So far, evidenced by the facts shown above, the indefinite reading of *wh*-words does not seem to be bonded to sentential-*le*. And I generally agree with Tsai (1999) in treating *wh*-words as indefinite variables.

In contrast to Erlewine (2017), Zhang (2018) claims that sentential-*le*, along with *laizhe* and *ne*, are Complementizers lower than SPFs (*ma*, *ne*). By assuming this, *wh*-words in

subject position can be properly scoped by sentential-*le*, which would then give rise to the indefinite reading. She further claims that as SFAPs like sentential-*le*, *laizhe*, and *ne* are not only Comp heads but are also responsible for finiteness, a CP domain can be depicted as in (63).



CP_{FinP} is considered to be lower than CP_{Speech Act}, at which SFPs like *ma* and *ne* are positioned. Zhang (2018) uses the following examples in (64) to support her argument. The only difference between (64a) and (64b) is that the former employs *laizhe-ma* sequence, whereas the latter has it reversed. As a result, sequence like *ma-laizhe* is unacceptable.

- (64) a. 他那时写着作业来着吗?
 Ta nashi xie-zhe zuoye laizhe ma?
 he then write-ASP homework SFAP Q
 ‘Was he doing the homework at that time?’
- b. 他那时写着作业吗来着?
 *Ta nashi xie-zhe zuoye ma laizhe?
 he then write-ASP homework Q SFAP

However, I find there are some counterexamples that may challenge her conclusion: (i) Sentential-*le* displays distinct properties from *laizhe* and *ne*, and additionally, *laizhe* and *ne* do not have completely identical distributions either; hence they do not form a group; and (ii) sentential-*le* can cooccur with *laizhe* and *ne*, while *laizhe* and *ne* cannot cooccur with each other.

According to Rizzi (1997) and Giorgi (2010), the anchoring of tense to utterance time

relies on finiteness; in other words, no root clause is non-finite. The contrast shown in (65a–c) suggests that sentential-*le* can support an independent root clause, whereas *laizhe* and *ne* cannot.²⁴

- (65) a. 他出国了。
 Ta chu guo le.
 he out country ASP
 ‘He has left the country.’
- b. 他出国来着。
 #Ta chuguo laizhe.
 he out-country SFAP
- c. 他出国呢。
 #Ta chuguo ne.
 he out-country SFAP

(65b–c) can be well-formed only when there is an assisting element that can determine the Reference Time. Apart from the difference with respect to tense, they show distinct behaviors in *shi...de* focus cleft sentences. Paul and Whitman (2008) argue that what is focused by *shi...de* is smaller than CP, and as demonstrated in (66), only propositions ended with *laizhe* and *ne* can occur between *shi* and *de*.

- (66) a. 浩浩是住这儿的了。

²⁴ Zhang (2018) argues that sentential-*le* and *ne* are compatible with all three deictic temporal expressions, so they are not tense markers. However, the meanings of all three kinds of sentences in her work are realized through the presence of temporal adverbs. Crucially, a more specific observation in which the temporal-indication is solely bound to sentential-*le* and *ne* per se is needed, as is done in (49) in the present work.

*Haohao shi [zhu zher] de le.
 Haohao SHI live here DE ASP
 ‘This is the place where Haohao lives.’

b. 浩浩是住这儿的来着。

Haohao shi [zhu zher] de laizhe.
 Haohao SHI live here DE SFAP
 ‘It seems this is the place where Haohao lived.’

c. 浩浩是住这儿的呢。

Haohao shi [zhu zher] de ne.
 Haohao SHI live here DE SFAP
 ‘This is the place where Haohao lived.’

Paul and Whitman (2008) claim that *de* in such a construction must be seen as a past tense indicator. The reason why (66a) is bad becomes obvious: *-le* may compete with *de* in being able to indicate a temporal meaning, just like ‘*I have drunk some beer*’ is an undesirable expression of English. The contrast depicted above again differentiates *-le* from *laizhe* and *ne*, in that *-le* is the genuine tense-related functional head.

As to the difference between *laizhe* and *ne*, consider their compatibility with the interrogative marker *ma*. As illustrated in (67), only *laizhe* can be followed by *ma*.

(67) a. 浩浩今年 25 岁来着吗?

Haohao jinnia 25-sui laizhe ma?
 Haohao this-year 25-age SFAP Q
 ‘Is Haohao 25 years old this year?’

b. 浩浩今年 25 岁呢吗?

*Haohao jinnia 25-sui ne ma?
 Haohao this-year 25-age SFAP Q

Finally, I argue that there is a hierarchical relation between *le* and *laizhe/ne*. (68) presents the fact that sentential-*le* may be followed by either *laizhe* or *ne*, as shown in (68a-b). On the other hand, *laizhe* can be followed by *ne*, whereas *ne* cannot be followed by *laizhe*, as (68c-d) demonstrate.

- (68) a. 孩子去超市了来着。
 Haizi qu chaoshi le laizhe.
 child go super-market ASP SFAP
 ‘It seems that the child has gone to the supermarket.’
- b. 孩子去超市了呢。
 Haizi qu chaoshi le ne.
 child go super-marker ASP SFAP
 ‘The child has gone to the supermarket.’
- c. 孩子想去超市来着呢。
 Haizi xiang qu chaoshi laizhe ne.
 child want go super-market SFAP SFAP
 ‘It seems that the child wants to go to the supermarket.’
- d. 孩子想去超市呢来着。
 *Haizi xiang qu chaoshi ne laizhe.
 child want go super-market SFAP SFAP

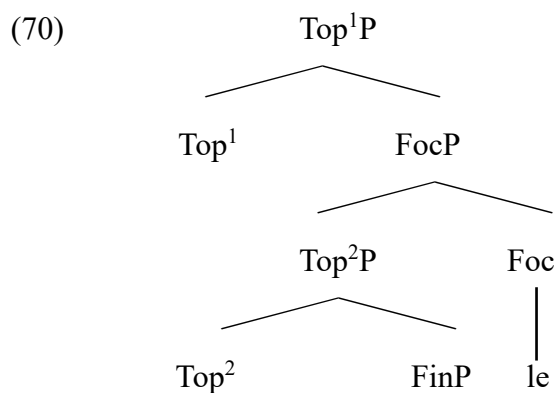
Based on the arguments given above, I claim that although Zhang (2018) indeed makes a correct argument that sentential-*le*, *ne* and *laizhe* are particles associated with the left periphery, it seems necessary to uncouple them into a more articulated hierarchy in which the three of them are heads that project independently.

In the case of sentential-*le*, I adopt Wang's (2018) generalization that analyzes it as Focus⁰ (Following Ernst and Wang 1995, Shyu 1995, and Paul 2005, I also assume Focus⁰ and Topic⁰ heads (I will discuss this in Chapter 3 and 4 that these two heads can either occur in the left

periphery or inflectional layer). Besides that, I would like to argue that it fits well in the fine left periphery sketched in Rizzi (1997: 18): that Topic⁰ can appear above or below Focus⁰. Observe (69) in which the surface subject may fall in/outside the scope of sentential-*le*.

- (69) 约翰不去日本了。
 Yuehan bu qu Riben le.
 John not go Japan ASP
 Reading a: ‘(John has been planning to go to Japan, but) John has quitted.’
 Reading b: ‘(Among a number of people who have been planning to go to Japan), John has quitted.’

Note that there are two different presuppositions in the case of (69) and sentential-*le* marks that something contra the presupposition would happen in each of them. However, as reading a and b suggest, the assertion made on *John* would vary according to the selection of presupposition. As for the reading a, the transitional content is what *John* would do, whereas in reading b, what is changed is the specification of a member-set that contains *John*. In other words, *John* is a part of the newly-evoked assertion in reading b but not in reading a. Thus, a plausible analysis would be that John in (69) may appear either above or below the sentential-*le*:



Where exactly hosts the subject, Top²P or TP-internal, is irrelevant. Since it would be c-

commanded by Focus⁰ either way. Thus, the ambiguous reading of (70) can be attributed to the optional subject-topicalization, according to which, the subject-below-Focus⁰ reading simply reflects a structural configuration that the subject stays in TP, while the subject-above-Focus⁰ hinges on the movement of the subject to the left periphery.

Although the standard Force> Topic*>Focus>Topic*>Fin thread proposed in Rizzi (1997) does seem to provide a desirable analysis for sentential-*le*, I think we may need a slightly refined left periphery to handle with Chinese data. Note that Rizzi (1997: footnote 6) points out Force head may not always ‘close off the C system’, and in that vein Haegeman (2002: 164) formulated the following configuration:

(71) Sub > Top* > Foc > Force > Mod* > Fin

Haegeman’s system may be instantiated via the subject-dislocation structures in Chinese. For example, a subject may appear after the imperative-marker *ba*:

(72) 拿来 吧 你!
 take-come SFP you
 ‘Give it to me!’

Since the reference of *you* is known to both speaker and hearer, it is unproblematic for one to assume it involves topicalization. Despite imperativeness in Chinese is not always overtly marked, the imperative reading in (72) is encoded by *ba*. As a result, Topic takes a higher position than clause-type marker. Nonetheless, I find that sentential-*le* can never surpass a clause-type markers, hence I will keep the position that Focus is lower than Force, consider (73).

(73) a. 放弃 了 吧 (*了)!
 Fangqi le ba (*le).
 give-up ASP SFP ASP

'Just give up!'

- b. 放弃了吗 (*了) ?
Fangqi le ma (*le).
give-up ASP Q ASP
'Did (someone) give up?'

Ba in (73a) and *ma* in (73b) overtly mark imperativity and interrogative respectively. And sentential-*le* is strictly prohibited from occurring after them.

Furthermore, based on the semantic properties and the linear order of Chinese sentence-final particles (SFP), Li (2006: 64) entertains the following CP domain scheme:

- (74) Discourse > Degree > Force > Evaluative > Mood > Fin
a *ma/ba* *ne*

SFPs are argued to be functional heads demonstrating a rather rigid sequence according to Li, and the sequential order between *laizhe* and *ne* illustrated in (68) can then be captured: given *laizhe* cannot appear after *ne*, we can analyze that *laizhe* is the head of Mood_{evaluative} in the sense of Cinque (1999).

Interestingly, it seems that all the SFPs except for *a* can be observed before a postposed Topic, which again supports the idea that Topic can appear above Force:

- (75) a. 是个好人吗他? *Force-Topic*
Shi ge haoren ma ta.
COP CL good-person Q he
'Is he a good person?'
- b. 是个好人呢他。 *Evaluative-Topic*
Shi ge haoren ne ta.
COP CL good-person SFP he

- ‘What a good person he is.’
- c. 是个好人嘛他。 *Degree-Topic*
- Shi ge haoren ma ta.
 COP CL good-person SFP he
 ‘After all, he is a good person.’
- d. 是个好人吧他。 *Degree-Topic*
- Shi ge haoren ba ta.
 COP CL good-person SFP he
 ‘I guess he is a good person.’
- e. 是个好人啊他。 *Discourse-Topic*
- ??Shi ge haoren ba ta.
 COP CL good-person SFP he
 ‘He is a good person.’

As I will discuss in Chapter 3, an epistemic modal verb may also show up at the clause-final register together with the postposed subject. Note that although such sentences are generally allowed only in colloquial utterances, the variation of acceptability is still observable.

- (76) a. 去北京了他可能 (?应该)。
- Qu Beijing le ta keneng (?yinggai).
 go Beijing ASP he may^E (may^E)
 ‘He may have been to Beijing.’
- b. 去北京了可能(?*应该)他。
- ??Qu Beijing le (?*yinggai) keneng ta.
 go Beijing ASP may^E may^E he
 ‘He may have been to Beijing.’

As (76a-b) show, *yinggai*, when used as epistemic, is not as acceptable as *keneng* when appearing at the clause-final positions. Related discussion will be detailed in 3.1.2.

On the other hand, (76c-d) accords with the functional head sequence proposed by Li (2006) that the postposed subject-epistemic compound may not occur after Discourse head *a*. Recall that a bare subject is also incapable of surpassing *a* as illustrated in (75d). Therefore, it seems quite plausible to generate a left periphery structure for Chinese with respect to SFPs in the fashion of (77).

(77) Discourse> Top*> Degree>Force>Mood> Foc> Top*>Fin

Still, the structure mapped out above needs to be augmented. First, let us consider the alternations of *wh*-adverbials *zenme* ‘how’ and *weishenme* ‘why’. In Tsai (2008b), the clausal *wh* and reason *wh* are argued as sentential operators located in the left periphery, whereas manner and instrumental *wh* are pure *vP*-modifier. Besides, a special case of denial *zenme* is considered to be the higher [SPEC, ForceP]. This conclusion is made explicitly clear by the following clauses:

- (78) a. 他为什么可以去东京?
 Ta weishenme keyi qu Dongjing.
 he why can^D go Tokyo
 ‘Why is he allowed to go to Tokyo.’ [Reason>Deontic]
- b. 他可以为什么去东京?
 Ta keyi weishenme qu Dongjing.
 he can^D why go Tokyo
 ‘Why is he allowed to go to Tokyo.’ [*Reason>Deontic/ Deontic>Purpose]
- c. 他可以怎么去东京?
 Ta zenme keyi qu Dongjing.
 he how can^D go Tokyo
 ‘By what means can he go to Tokyo?’ [Deontic>Instrumental]

d. 他怎么 (*样) 可以去东京?

Ta zenme(*-yang) keyi qu Dongjing.

he how-like can^D go Tokyo

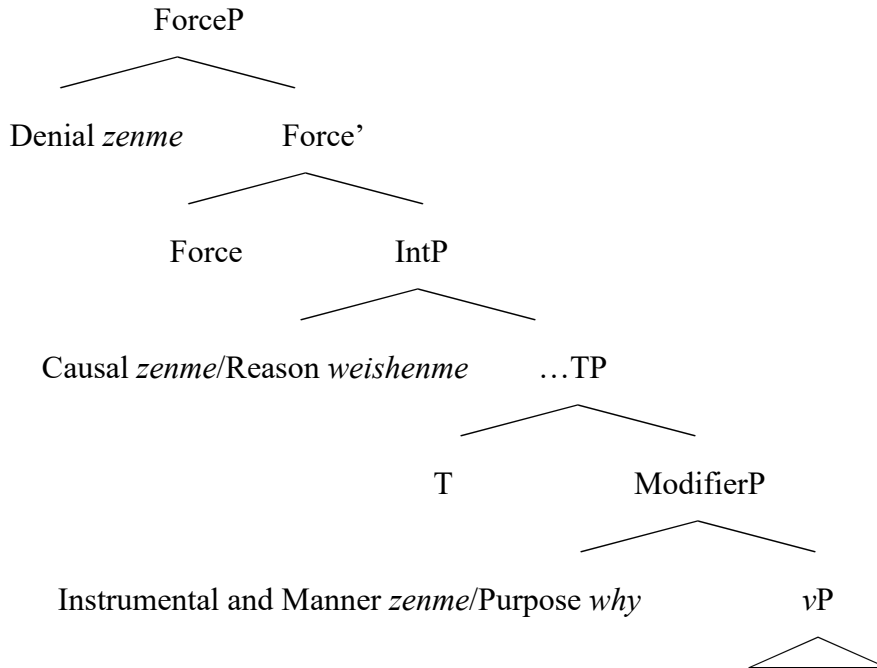
‘How come he is allowed to go to Tokyo?’[*Instrumental>Deontic/
Denial>Deontic or Causal>Deontic]

(78a-d) show that reason *wh* and causal *wh* must precede deontic modals, while instrumental *wh*, on the other hand, is required to appear before deontic modals, as in (78c). As to the denial construal of (78d), Tsai (2008b: 108) claims that the locus of denial *wh* is ForceP since it marks the ‘the change of illocutionary force’. Meanwhile, causal *wh* and reason *wh* are assumed as the head of Int(errogative)P²⁵:

²⁵ In contrast to causal *wh* that must occupy a C position, reason *wh* may optionally be analyzed as TP-adjunct. As suggested by (i) and (ii), unlike *zenme*, *weishenme* may be somehow compatible with multiple *wh* constructions. For such reason, Tsai assumes that *weishenme* may be allowed to be adjoined to TP.

- (i) a. 谁为什么要离开?
??Shei weishenme yao likai?
who why will^D leave
‘Who shall leave why?’
- b. 为什么谁要离开?
*Weishenme shei yao likai?
why who will^D leave
‘Who shall leave why?’
- (ii) a. 谁怎么要离开?
*Shei zenme yao likai?
who how will^D leave
‘How come who shall leave?’
- b. 怎么谁要离开?
*Zenme shei yao likai?
why who will^D leave
‘How come who shall leave?’

(79) *The diagram for zenme and weishenme (slightly modified)*



As for the left periphery for Topic and Focus field, Tsai (2008b: 108-109) further argues that Topics and contrastive Foci differ from each other greatly with respect to their distributions. First, Tsai argues that Topics are quite free by using the presumable Int head *shifou*:

- (80) a. 是否你不去东京?
 Shifou ni bu qu Dongjing?
 yes-no you not go Tokyo
 ‘Will you go to Tokyo or not?’ [Int>Subj]
- b. 你是否不去东京?
 Ni shifou bu qu Dongjing?
 you yes-no not go Tokyo
 ‘Will you go to Tokyo or not?’ [Top>Int]

- c. 是否东京你不去?
 Shifou Dongjing ni bu qu?
 yes-no Tokyo you not go
 ‘Will you go to Tokyo or not?’ [Int>Top(Obj)>Subj]
- d. 是否你不去东京?
 Shifou ni bu qu Dongjing?
 yes-no you not go Tokyo
 ‘Will you go to Tokyo or not?’ [Int>Subj>Obj]
- e. 东京是否你不去?
 Dongjing shifou ni bu qu?
 Tokyo yes-no you not go
 ‘Will you go to Tokyo or not?’ [Top(Obj)>Int>Subj]

As demonstrated in (80a-e), Topic, either subject or object, can occur before or after Int head. By contrast, Tsai suggests contrastive Foci would suffer from much more constraints. Consider clauses in (81) in which contrastive Foci is realized through object fronting:

- (81) a. 是否你东京要去, 大阪不去?
 Shifou ni **Dongjing** yao qu, **Daban** bu qu?
 yes-no you Tokyo will^D go Osaka not go
 ‘Is it the case that you are supposed to go to Tokyo, not Osaka?’
 [Int>Topic>Focus]
- b. 是否东京你要去, 大阪不去?
 Shifou **Dongjing** ni yao qu, **Daban** bu qu?
 yes-no Tokyo you will^D go Osaka not go
 ‘Is it the case that you are supposed to go to Tokyo, not Osaka?’
 [Int> Focus>Subj]
- c. 你是否东京要去, 大阪不去?

Ni shifou **Dongjing** yao qu, **Daban** bu qu?
 you yes-no Tokyo will^D go Osaka not go
 ‘Is it the case that you are supposed to go to Tokyo, not Osaka?’
 [Top>Int> Focus]

d. 东京是否你要去, 大阪不去?
 ***Dongjing** shifou ni yao qu, **Daban** bu qu?
 Tokyo yes-no you will^D go Osaka not go
 ‘Is it the case that you are supposed to go to Tokyo, not Osaka?’
 [*Focus>Int>Top]

e. 东京你是否要去, 大阪不去?
 ***Dongjing** ni shifou yao qu, **Daban** bu qu?
 Tokyo you yes-no will^D go Osaka not go
 ‘Is it the case that you are supposed to go to Tokyo, not Osaka?’
 [*Focus>Top>Int]

Illustrated in (81a-c), grammaticality retains as long as Int head precedes Focus head. On the contrary, the unacceptability of (81d-e) would be on account of the ordering that Focus is higher than Int. This topology of the C-domain laid out via (81) is also borne out by examining the relation between *wh*-adverbials and Foci, as suggested in Tsai (2008b: 109).

(82) a. 你怎么东京要去, 大阪不去?
 Ni zenme **Dongjing** yao qu, **Daban** bu qu?
 you how Tokyo will^D go Osaka not go
 Reading a: ‘How come you are supposed to go to Tokyo, not Osaka.’
 [Causal>Focus]
 Reading b: *‘By what means are you supposed to go to Tokyo, not Osaka.’
 [*Instrumental>Focus]

b. 你为什么东京要去, 大阪不去?

Ni weishenme **Dongjing** yao qu, **Daban** bu qu?
 you why Tokyo will^D go Osaka not go
 ‘Why are you supposed to go to Tokyo, not Osaka.’ [Reason>Focus]

c. 你东京为什么要去, 大阪不去?

Ni **Dongjing** weishenme yao qu, **Daban** bu qu?
 you Tokyo why will^D go Osaka not go
 ‘Why are you supposed to go to Tokyo, not Osaka.’ [Focus>Reason]

Note in (82a), the only valid interpretation for *zenme* is causal, because Instrumental *zenme* is argued to merge to vP-modifier which is lower than Focus head. As to the case of *weishenme* in (82b-c), it is predicted by Tsai that *weishenme* is allowed to merge to TP or IntP, hence it can be either higher or lower than Focus.

I think that Tsai’s mapping of the left periphery agrees well with Haegeman (2002), which assumes that Topic, instead of Focus, can occur higher than Force. (83a-c) show that only a Topic can appear higher than denial *zenme*:

(83) a. 他怎么能去东京!

Ta zenme neng qu Dongjing!
 he how can^D go Tokyo
 ‘How could he go to Tokyo!’

b. 他怎么东京去了大阪没去!

Ta zenme **Dongjing** qu-le **Daban** mei
 qu.
 he how Tokyou go-ASPO saka have-not
 go
 ‘How could he go to Tokyo but Osaka!’ [Top>Denial>Focus]

c. 东京怎么他去了大阪没去!

***Dongjing** zenme ta qu-le **Daban** mei
qu.
Tokyo how he go-ASP Osaka have-not
go

[*Focus>Denial> Top]

Furthermore, it seems that Tsai's (2008b) generalization is compatible with the C-domain investigation conducted in Cheung (2014). According to Cheung, the so-called *wh*-fronting in Chinese is argued to be responsible for licensing an Identificational Focus (IdentF) which locates at [SPEC, FocusP]. IdentF, as discussed in É. Kiss (1999: 219), has a two-fold implication: (i) it conveys old, presupposed information; (ii) it conveys *exhaustive identification*. These two properties of IdentF can be shown by (66) and the paraphrasing of it:

(84) Who is that guy that stole my sandwich?

→ In a set of stakeholders, who is x such that it is not only true of x but also no one else stole my sandwich.

The notion of exhaustivity can be understood in a way that certain proposition is true only if the identity of the *wh*-word in question is exhaustive; to put it simply, there is only one answer to such *wh*-word. Therefore, Cheung (2014: 397) proposes that the exhaustivity can be brought out by fronting *wh*-words in assistance with an optional focus marker *shi*.

(85) Q: (是)谁张三不喜欢?

(Shi) shei Zhangsan bu xihuan?
SHI who Zhangsan not like

‘Who is the one that Zhangsan doesn’t like?’

A1: (是)王二。

Shi Wang’er.

SHI Wang’er

‘It’s Wang’er.’

A2: *(是)王二和李四。

Shi Wang’er he Lisi.

SHI Wang’er and Lisi

‘It’s Wang’er and Lisi’

The deviant answer A2 in (85) suggests that *wh*-fronting in Chinese does seem to comply the exhaustivity nature of IdentF. That this kind of question can only be answered by a single IdentF (i.e., *Wang’er* in A1)

It is important to keep it in mind that *wh*-fronting structure differs from *wh*-in-situ counterparts syntactically. As a reminiscent of Tsai’s (2008b) argument, fronted *wh*s may be arguments or adjuncts, but never *how*-kind *wh*s. Examples are as follows:

(86) *Wh*-arguments

a. (是)什么你最讨厌?

(Shi) shenme ni zui taoyan.

SHI what you most hate

‘What is it that you hate the most?’

Wh-adjuncts

b. (是)什么时候他回家的?

(Shi) shenme-shihou ta hui-de jia.

SHI when he return-PAST home

‘When was it that he went home?’

- c. (是)为了什么他选择放弃?
 (Shi) wei-(le)shenme ta xuanze fangqi
 SHI for-ASP-what he choose give-up
 ‘For what purpose is it that he chose to give up?’
- d. (是)为什么他选择放弃?
 (?Shi) weishenme ta xuanze fangqi
 SHI when he choose give-up
 ‘Why is it that he chose to give up?’
How-kind
- e. (是)怎么他选择放弃?
 *(Shi) zenme ta xuanze fangqi
 SHI how he choose give-up
 Intended reading: ‘How come he chose to give up?’

Although (86d) is indeed more acceptable than (86e), such fronting of Reason-*wh* may not be the first option for Chinese speakers. And the appearance of *shi* would arguably bring down the acceptability, in contrast to other kinds of *wh*-frontings in (86a-c). On the other hand, the fronting of Purpose-*wh* does not cause any problem, as (86c). Thus, I assume the partial acceptability of (86d) may rest on the exact locus of Reason-*wh*, that, as Tsai (2008b) argues, Reason-*wh* can merge as a TP-adjunct. That is to say, it is very clear that the target of *wh*-fronting is limited to TP and below (as Cheung 2014: 419 also claims that both *shi* and *wh* originate in the same TP).

Furthermore, Cheung (2014: 418) claims that *wh*-fronting involves a monoclausal structure instead of biclausal. One of the prevailing pieces of evidence offered by Cheung is that Topic must occur before fronted *wh*s. Consider (87a-b), that (87a) becomes ungrammatical once the Topic is surpassed by the fronted *wh*-phrase.

- (87) a. 约翰, (是)在哪里你见过?

Yuehan_k, (shi) **zai** **nali**_i ni t_i jian-guo t_k?
 John SHI at where you see-ASP
 ‘As for John, where did you see him?’

b. (是)在哪里约翰你见过?

*(Shi) **zai** **nali**_i Yuehan_k, ni t_i jian-guo t_k?
 SHI at where John you see-ASP
 ‘As for John, where did you see him?’

Given the fronted *wh*s in question are argued to be IdentF, one may naturally predict that they appear below Topics, according to the structure of (71). In addition, IdentF seems to take a higher position than *lian*-Focus in the register of Foci, as *lian* preceding the fronted *wh*-phrase in (88b) would cause ungrammaticality.²⁶

(88) a. (是)谁连约翰都不喜欢?

Shi shei_k lian-Yuehan dou bu xihuan t_k.
 SHI who even-John all not like
 ‘Who is it that even John doesn’t like?’

b. 连约翰(是)谁都不喜欢?

*Lian-Yuehan Shi shei_k dou bu xihuan t_k.
 even-John SHI who all not like
 ‘Who is it that even John doesn’t like?’

At this stage, the structure of the left periphery illustrated in (71) can now be expanded/modified as (89):

(89) Subj/Top> Force >Top*>Int> (Ident)Foc>(Lian)Foc> (S-le) Foc>Fin

²⁶ *Lian*-Focus is often thought to be the realization of Focus head (cf. Shyu 1995, Tsai 2004 and Paul 2005).

I will refer to the structure illustrated in (89) regarding the analysis of asymmetrical properties of the monosemic *keneng* and polysemantic *yinggai* in following chapters. To give a quick preview, as demonstrated in (90), *keneng* may precede a fronted *wh*, whereas *yinggai* may not.

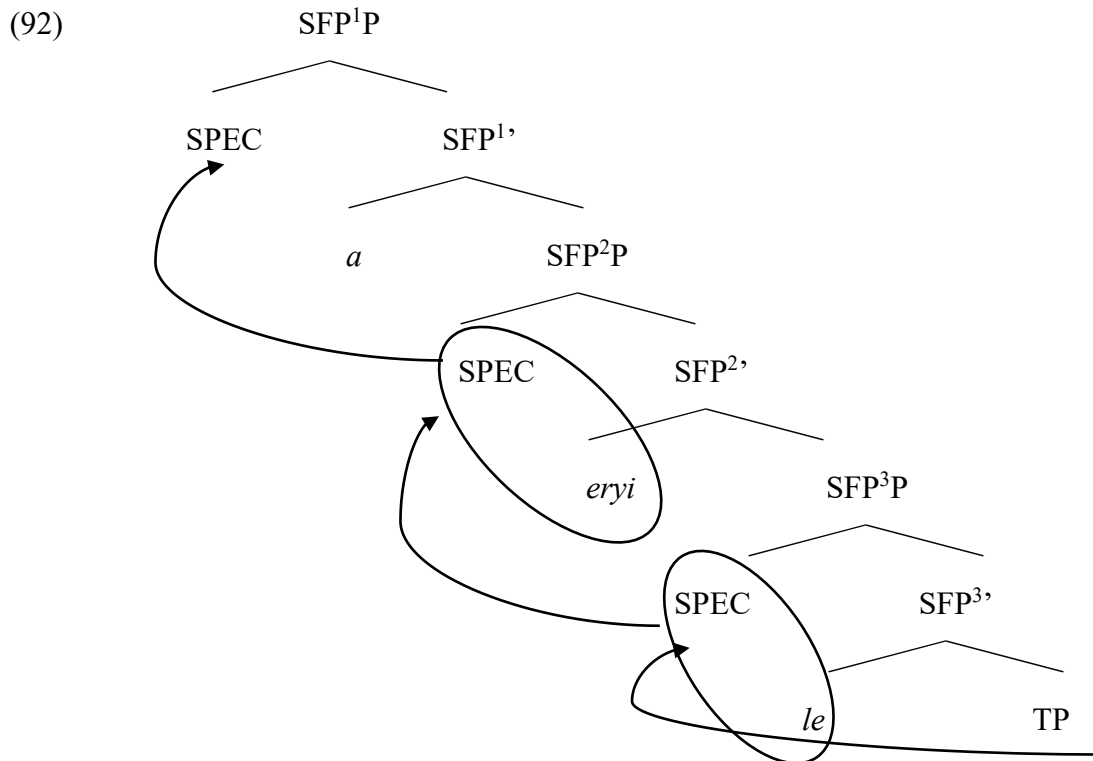
- (90) a. 可能是谁约翰不喜欢?
 Keneng shi shei Yuehan bu xihuan.
 may^E SHI who John not like
 ‘Who might be the one John doesn’t like?’
- b. 应该谁约翰不喜欢?
 *Yinggai shi shei Yuehan bu xihuan.
 may^E SHI who John not like
 ‘Who might be the one John doesn’t like?’

The remaining question of this section would be that how do we generate the surface linear order of the left periphery. Although Li (2006: footnote 4) claims that such a functional head schema is compatible with either head-initial or head-final approaches, by assuming a *right* periphery for SFPs. However, we may need some other theoretical provisos to explain why Chinese employs head-initial settings inside TP, whereas shifts to head-final routes thereafter.

In this thesis, I follow the approaches of Sybesma (1999), Hsieh & Sybesma (2011) and Pan (2021), which assume the TP complement would be raised to the specifiers of functional heads in C domain successively. To instantiate this hypothesis, Pan (2021) pictures a derivation involving three SFPs:

- (91) 他只是去北京了而已啊!
 Ta zhishi qu Beijing le eryi a.
 he only go Beijing S-le SFP SFP

'It's just that he went to Beijing (no big deal).



This kind of ‘roll-up’ movement exemplifies Kayne’s (1994) Linear Correspondence Axiom (LCA), which can be paraphrased as follows:

(93) *Linear Correspondence Axiom*

For three lexical items α , β and γ , α precedes β linearly iff α asymmetrically c-commands β , or γ , which dominates α , asymmetrically c-commands β .

Thus, a structure in which the rightmost particle takes the higher position can then be portrayed by (92). In that, TP raises to [SPEC, *le*] to give rise to the correct TP-sentential-*le* order. Next, the entire SFP³P raises to [SPEC, *eryi*] making sure that *eryi* occurs after sentential-*le*. At last step, SFP²P raises to [SPEC, *a*] forming the legit SFP sequence

sentential-*le-eryi-a*.

I argue that concluding that Chinese involves a uniform head-initial structure may further elucidate the overt *wh*-movements. Even though Chinese is often considered to be a *wh*-in-situ language, *wh*-words may appear at the clause-initial position, illustrated in (94). It should be pointed out (94) involves nothing like simple object fronting, since the *wh*-word appears before the subject²⁷.

(94) 什么你该做, 什么你不该做。

Shenme	ni	gai	zuo	t _{wh}	shenme	ni	bu-gai
t ^{wh} .							
what	you	should ^D	do		what	you	not-
		should ^D					

‘What should you do and what you should not.’

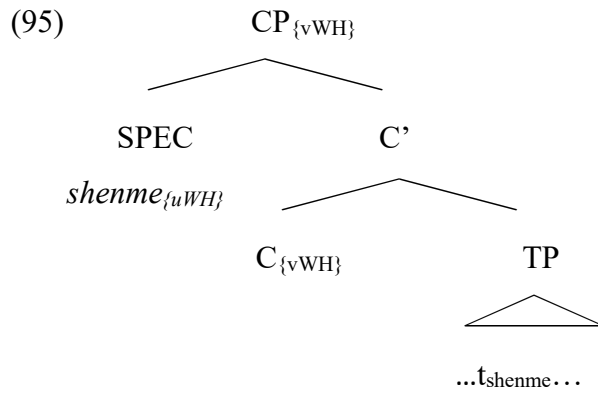
In such case, unselective binding analysis might not be enough to explain why overt movement takes place. There might be a possibility to assume a head-final C-domain if one argues that *wh*-words in Chinese being in-situ is just apparent which in fact undergo rightward movement. However, such an analysis cannot be applied to clauses like (94) due to that there would be no proper landing site for the *wh*-word since a head-final C-domain is

²⁷ It should be noticed that (94) may not be one of the *wh*-fronting sentences discussed in Cheung (2014). Specifically, the focus marker *shi* is not permitted before the *wh*-words in (94):

(i) Shi shenme ni gai zuo t_{wh} shenme ni
 SHI what you should^D do what you
 not-should^D t^{wh}.
 bu-gai

‘What should you do and what you should not.’

presumed. On the other hand, the analysis for (94) would be very straightforward if we take Chinese C-domain to be head-initial, as depicted in (95).



3. Epistemic Modals in Chinese

In this chapter, I will focus on the syntactic properties of Epistemic modal verbs (EMV) in Chinese. As I have discussed in 1.1 and 1.2, I generally take *yinggai* and *keneng* under the scope of investigation. I will argue that although they both convey propositional modality, they behave rather differently with respect to both narrow syntax and semantic ground. Such difference, as previously proposed in 1.3, can be reduced to the contrast of monosemic/polysemantic as well as subjective/objective natures of them; that the monosemic *keneng* is not required to enter into an Agree relation with T head and can have either subjective or objective reading, while the polysemantic *yinggai* must raise to T_{superior} to determine its intended meaning and can only have subjective modal meaning. Besides their asymmetrical properties, I will also address the shared traits of them that can separate them from other modal verbs or adverbials.

3.1 The Asymmetry between *Keneng* and *Yinggai*

In this section, I will turn to the asymmetry between *keneng* and *yinggai*. Overall, they differ from each other with respect to the following topics: (i) the occurrence before subjects; (ii) the occurrence at sentential-final position; (iii) the compatibility with *wh*-interrogatives; (iv) the compatibility with yes-no interrogatives. In this thesis, I argue that the differences between *keneng* and *yinggai* can be accounted for uniformly by an Agree-based approach.

3.1.1 EMVs Preceding the Subject

EMV in other languages seems to appear at a fixed location. For example, epistemic modal verbs in languages like English, German and Italian take the position right after the subject in declaratives, as in (1). In the case of Chinese in (2), the situation is a little more

complex that EMV may occur before the subject without converting the declarative into an interrogative:

(1) *English*

- a. He may be a good person.
- b. He must be a good person
- c. *Must/may he be a good person.

German

- d. Er könnte ein guter mensch sein
he may^E one good man be
'He may be a good person.'

Italian

- e. Potrebbe essere una brava persona
may^{D-3rd} be one good person
'He may be a good person.'

(2) *Chinese*

- a. 他可能是个好人。
Ta kenengshi ge haoren.
He may^E COP CL good-person
'He may be a good person.'
- b. 他应该是个好人。
Ta yinggai shi ge haoren.
He may^E COP CL good-person
'He may be a good person.'
- c. 可能他是个好人。
Keneng ta shi ge haoren.
May^E he COP CL good-person
'He may be a good person.'

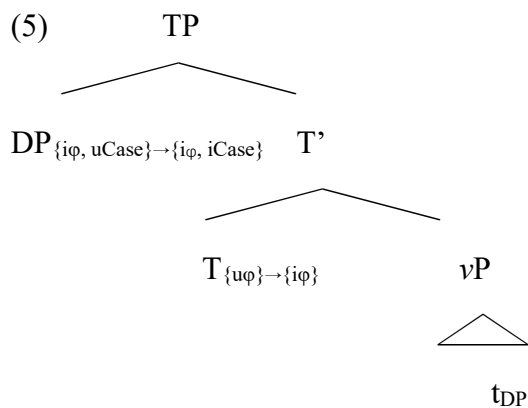
As illustrated in (2c), *keneng* appears before the subject, whereas epistemic *may/must* in English is banned from doing so. The water is even muddied with the fact that *yinggai*, also an EMV, is not as grammatical as *keneng* when taking a pre-subject position:

- (3) a. 应该他是个好人。
 ??Yinggai ta shi ge haoren
 may^E he COP CL good-person
 ‘He may be a good person.’
- b. 应该他去了东京。
 *Yinggai ta qu-le Dongjing.
 May^E he go-ASP Tokyo
 Intended reading: ‘It is possible that he went to Tokyo.’
- c. 可能他去了东京。
 Keneng ta qu-le Dongjing.
 May^E he go-ASP Tokyo
 ‘It is possible that he went to Tokyo.’

Shown in (3a-b), with *yinggai* preceding the subject, the grammaticality decreases significantly. The contrast is more evident if the verb is *le*-marked, as in (3b-c) where the *keneng*-headed clause is much more acceptable than the *yinggai*-headed one. The ungrammaticality of (3b) also differentiates EMV from epistemic adverbs, since an adverb like *huoxu* ‘probably’ will not cause any problem (detailed discussions will be postponed until 3.3) as illustrated below:

- (4) 或许他去了东京。
 Huoxu ta qu-le Dongjing.
 probably he go-ASP Tokyo
 ‘He probably went to Tokyo.’

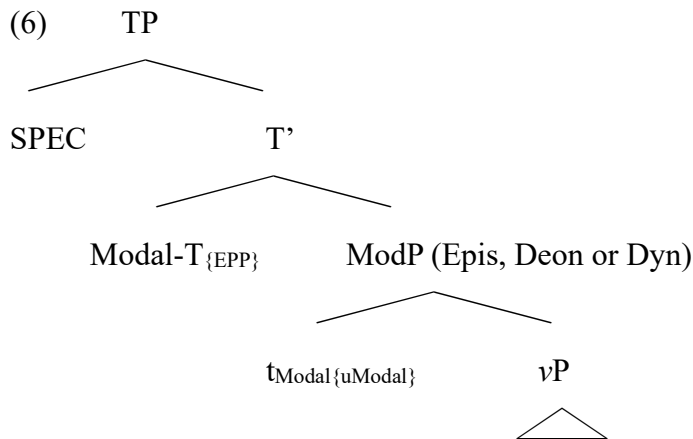
I argue, therefore, the distinct feature-value requirements assigned to *keneng* and *yinggai* is the decisive factor with regard to the asymmetry shown in (3). In the case of *yinggai*, recall it is clarified in 1.3 that it can function as a deontic modal verb as well. Following the notion that the feature-valuation operation makes sure that no uninterpretable features in a derivation would be transferred to C-I interface without violating Full Interpretation, I argue that polysemantic modal verbs in Chinese carry $\{u\text{Modal}\}$ features inherently which must be properly valued through derivation. The valuation mechanism for $\{u\text{Modal}\}$ proposed in the present work is somewhat similar to what proposed in Chomsky (2000) and Bošković (2007), according to which the Case of the subject is valued as a reflection of the valuation of φ -feature.



In the diagram pictured in (5), T with the uninterpretable φ -feature acts as the Probe in the first place. After T's uninterpretable φ -feature is valued via the Probe-Goal relation between T-DP, DP raises to a Probe position of T (may be triggered by the EPP requirement). In turn, the $\{u\text{Case}\}$ feature of it gets valued by probing T. It is noteworthy that T does not contain a matching feature like $\{i\text{Case}\}$, in other words, such Case-feature valuation can be taken to be the by-product of φ -feature valuation (cf. the discussion in 2.1). And the Case

feature can be *sui generis* uninterpretable²⁸.

In a very similar way, the valuation of {uModal} can be undertaken via the Agree with T. It is suggested in 2.1.1 that T heads in Chinese need to be ‘supported’ to serve as a label, and the raising of modal verbs, apart from the appearance of an overt subject, can shoulder the role of supporter. Consider (6):

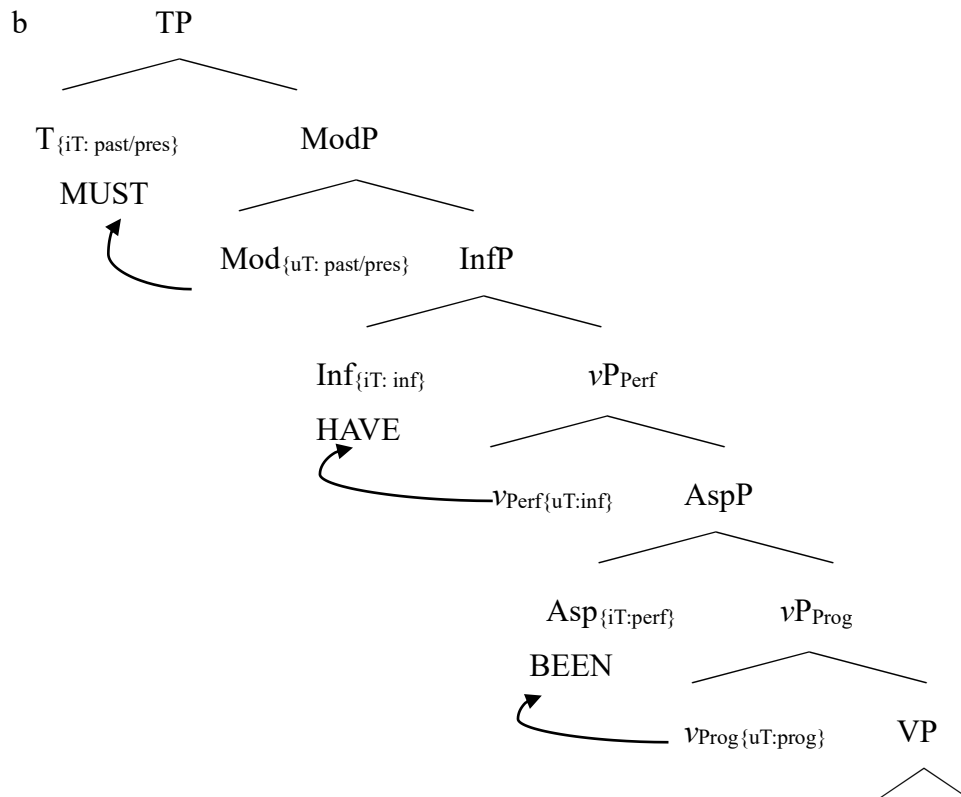


In the diagram of (6), T does not necessarily have the counterpart feature of {uModal}. The raising of a modal verb is mainly motivated by the requirement of EPP-checking requirement (a similar approach is assumed in Miyagawa 2010: 36). Note that the assumption that modal verbs in Chinese bear uninterpretable features is based on their polysemantic nature, and the raising of modal verbs aims to strengthen the weak T. Alternatively, the raising of modal verb can also be legalized under Bošković’s (2007) foot-driven movement. In a nutshell, Bošković’s proposal dictates that for an item α bearing uninterpretable features which fails to find a proper Goal within its c-commanding domain, it moves to a higher

²⁸ Pesetsky & Torrego (2004, 2007) present an anti-*sui generis* analysis of nominative case valuation. In short, the {uCase} feature of a DP is considered to be an uninterpretable tense feature, i.e., {uT}. The morphological nominative specification then is realized through the valuation of {uT} by probing T as its Goal.

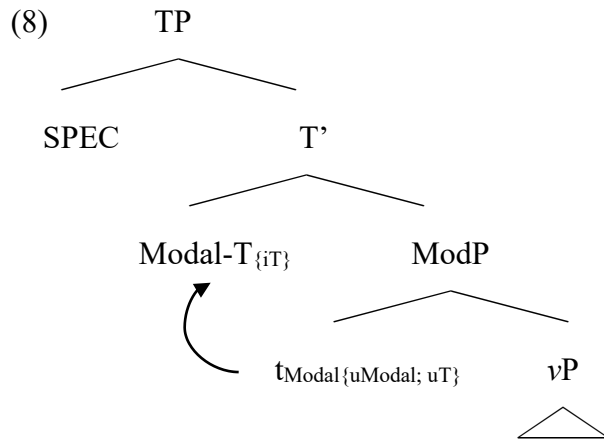
position can try to probe again. To instantiate this foot-driven movement, Harwood (2014: 34) claims that this approach can be applied to English modal auxiliary system. The English sentence in (7a) would be the outcome of the derivation illustrated in (7b).

(7) a. He must have been fired.



First, the auxiliary *be* is assumed by Harwood to have uninterpretable $\{uT: \text{perf}\}$ feature, and the only way to make it interpretable is raising it to the higher position where it can probe a goal carrying the matching interpretable feature, namely the Asp head. The same operation takes place in the case of v_{Perf} and Mod. In particular, Mod head is assumed to have uninterpretable $\{uT: \text{past/pres}\}$ which must be valued via the Agree relation with the T head (This assumption may be seen as a reminiscent of Emonds 1978 and Pollock 1989 that finite auxiliaries must occupy T). If Harwood's analysis is on the right track, one may assume that Chinese modal verbs also check $\{uT\}$ feature with T, and the valuation of $\{u\text{Modal}\}$ might

be considered as a reflection of {uT-iT} agreement:



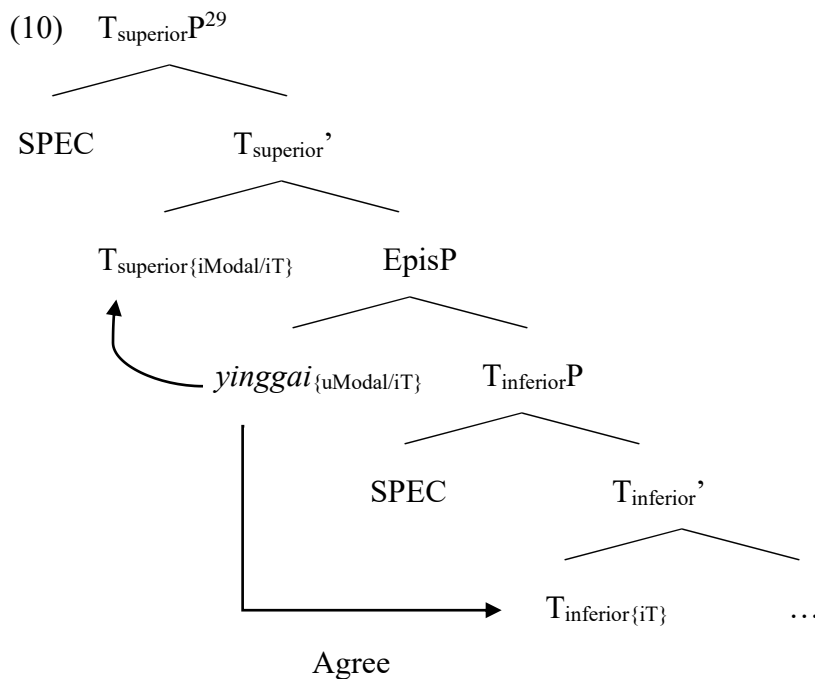
Alternatively, the valuation of {uT} may not be mandatory. As suggested in Huang (1987, 1989), modal verbs in Chinese must be finite. Since none of them can appear in a non-finite clause, as shown in (9b-c).

- (9) a. 约翰逼我去东京。
 Yuehan bi wo qu Dongjing.
 John force me go Tokyo
 ‘John forces me to go to Tokyo.’
- b. 约翰逼我可以去东京。
 *Yuehan bi wo keyi qu Dongjing.
 John force me can^D go Tokyo
- c. 约翰逼我应该去东京。
 *Yuehan bi wo yinggai qu Dongjing.
 John force me may^E go Tokyo

The finite nature of modal verbs then can be analyzed as an immediate consequence of the assumption that Chinese modal verbs contain inherently interpretable {iT:pres/past}

feature. This distinction of feature specification is not surprising since there is no will/would or can/could variation in Chinese. In that case, it would be necessary for T to bear {iModal} feature to activate the Agree operation.

Now, let us return to the raising of *yinggai* to T. Given that the crucial reason for *yinggai* to raise to T is that it must enter an Agree relation with T to value the uninterpretable feature. And if the Split-T construction is warranted, there are two ways to yield the correct derivation: (i) foot-driven to T_{superior}; (ii) or probe down to T_{inferior}.



In spite that both of the valuation strategies are valid, in fact the Probe-Goal relation between *yinggai*-T_{inferior} conforms more to the standard model of Agree as formulated in

²⁹ An alternative that correlates the polysemantic nature of *yinggai* with the notion of uninterpretable is presented in Chapter 6, which relies on the *interpretable but unvalued* feature specifications proposed in Pesetsky and Torrego (2007). Specifically, {uModal} is an interpretable but unvalued feature that needs to be valued to determine its modality force; i.e., Propositional or Event in the case of *yinggai*.

Chomsky (2000). However, the movement-less Agree illustrated in (10) is not crash-proof. First, if *yinggai* probes T_{inferior} as the Goal, it eliminates the possibility of the occurrence of another polysemantic modal verbs. Since a feature-valued *yinggai* not only intervenes the raising of the additional modal verb to the available T_{superior} , but also no correct modal verb sequence will be generated, as *yinggai*, together with *keneng*, must take the leading position of such sequences.

Second, recall that I follow Wu (2004) and Tsai(2008a) in assuming Asp-to-T raising, and specifically, Asp head is taken to be raised to T_{inferior} , and as a result, if there is an aspect marker in system, this T head can then function as an independent category because it is categorially strengthened after the Asp-to-T raising.³⁰ Consequently, this T head is rendered inert and can no longer act as a Goal. By contrast, such problem will not emerge if *yinggai* raises to T_{superior} for the purpose of feature-valuation. The contrast between these two strategies can be borne out through the deviant *pro*-drop sentences. Consider (11).

- (11) P: 小红天天吃炸鸡。
 Xiaohong tiantian chi zhaji.
 Xiaohong everyday eat fried-chicken
 ‘Xiaohong eats fired chicken every day.’
- S₁: (小红/她)应该胖了不少。
 (Xiaohao/ta) yinggai pang-le bushao.

³⁰ There is a trivial difference between my assumption of ASP head and Tsai’s. Namely, I argue verbal-*le* can have the tense anchored thus it should be treated as a head of Asp¹(see 1.3). According to a number of my informants, simple verbal-*le* clause may not always entail incompleteness. For example, even if the sentence like (i) is uttered out of blue, it does not sound odd at all.

- (i) 我洗了衣服。
 Wo xi-le yifu.
 I wash-ASP cloth
 ‘I did the laundry.’

Xiaohong/she may^D fat-ASP not-less

‘She might have put on some weight.’

S₂: (小红/她)应该重不少。

(??Xiaohong/ta) yinggai zhong bushao.

Xiaohong/she may^D heavy not-less

‘She might have put on some weight.’

In the context of a presupposition like (11P), there are two possible subsequent proposition sentences as in (11S1-S2) indicating the identical meaning. The crucial difference between them is that while (11S₁) entails a verbalized-adjective affixed by verbal-*le*, the verbalized-adjective in (11S₂) is non-affixed. Interestingly, the subject *Xiaohong* (or a resumptive pronoun) can hardly be dropped in the case of (11S₂), whereas (11S₁) does not seem to be constrained by that. My analysis is: in (11S₁), with the appearance of verbal-*le*, the only option for *yinggai* to value its feature would be the foot-driven one. It raises to T_{superior} to not only strengthen the T head but also have its own {uModal} features valued. In the case of (11S₂), however, no aspect marker is present. The Probe-Goal relation between *yinggai*-T_{inferior} is not impossible. The thing is, if *yinggai* opts to probe T_{inferior}, there would be no elements left to strengthen T_{superior}, which remains to be a weak head. The partial acceptability of (11S₂) might lie on the successive V-to-T movement, which may eventually strengthen T_{inferior} but V in such case will cross the head of Asp, a potential position for verb to get morphologically fused with Asp head -*le*, the Relativized Minimality is not pleased. At this point, the ill-formedness of (3a-b) (repeated as (12a-b)) can be accounted for.

(12) a. 应该他是个好人。

??Yinggai ta shi ge haoren

may^D he COP CL good-person

‘He may be a good person.’

b. 应该他去了东京。

*Yinggai ta qu-le Dongjing.

may^D he go-ASP Tokyo

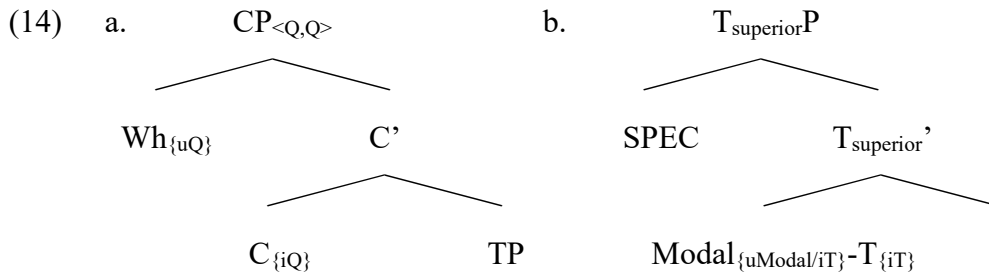
Intended reading: ‘It is possible that he went to Tokyo.’

Due to its polysemantic trait, *yinggai* must enter a Agree relation with T, either T_{superior} or T_{inferior} to value the {uModal} feature. After the valuation is carried out, *yinggai* then becomes inert by definition, thus cannot participate in further derivation. In my opinion, this inertness can be linked to the notion of Criterial Position proposed in Rizzi (2016), which can be summarized as follows:

(13) *Criterial Position*

The criterial position is the position in which a raised syntactic object has all the unvalued features valued. No further movement of this syntactic object is allowed after the valuation.

The criterial position is canonically assumed to be [SPEC, CP] or [SPEC, TP], however, the raised *yinggai* discussed above falls right in its definition. I argue that Minimal Search (MS) employs the same kind of search with respect to determining the *frozen* position:



In (14a), it is a typical structure assumed for *wh*-interrogatives. According to which, the *wh*-word would have its uninterpretable feature valued through the Agree with C, as MS would find the related feature simultaneously. This explains why (15) is ruled out:

(15) *Which boy do you wonder[_{<Q,Q>} Mary likes?]

In the diagram of (14b), MS may find the sharing feature of the subject and T_{superior} , {Specific} for example (see Yang and Lin 2020), in the first place. However, no valuation takes place in such situation. In other words, $T_{\text{superior}}P$ may be labeled as $\langle \text{SPE}, \text{SPE} \rangle$, but the position for subject is not a criterial position by definition. Furthermore, in the context of subject-dropping like (11S₁), MS must keep searching into deeper structure. The next appropriate search target could only be the Modal-adjoined T head. In this scenario, $T_{\text{superior}}P$ may be labeled as Modal-T in which feature-valuation is mandated to take place, resulting in a criterial position. Still, one may also construe the Modal-T compound in a form of $\langle \text{Semantic root}, \text{Categorizer} \rangle$ like $\langle \text{R-}^*v \rangle$ or $\langle \text{R-}^*n \rangle$. The label of $T_{\text{superior}}P$ will be $\langle \text{MOD}, \text{MOD} \rangle$ or $\langle \text{TEN}, \text{TEN} \rangle$. For both searching algorithms, modal verbs will be ‘frozen’ after raising to T. Therefore, the reason why *yinggai* is generally not allowed to appear before a subject comes to light: A polysemantic modal verb like *yinggai* must enter an Agree relation with a T head to value its uninterpretable {uModal} feature. As a result, the position of the modal verb will turn into a criterial position, and no further movement is permitted. Therefore, it does not appear before a subject which locates at [SPEC, $T_{\text{superior}}P$]. The proposal that modal verbs receive a specific meaning through feature-valuation also seems to comply with the *Thesis of Radical Interpretability* proposed in Brody (1997: 143):

(16) *Thesis of Radical Interpretability* (redubbed in Zeijlstra 2012: 495)

Each feature must receive a semantic interpretation in some syntactic location.

According to (16), the {uModal} feature of *yinggai* receives semantic interpretations. For concreteness, {uModal} receives the interpretation of ‘Propositional modality’. On the other hand, the notion ‘some syntactic location’ in the case of modal verbs may refer to the Criterial position.

The left matter that needs unraveling is that why *keneng* does not suffer from such post-subject constraint even though it also conveys a propositional modality meaning just like

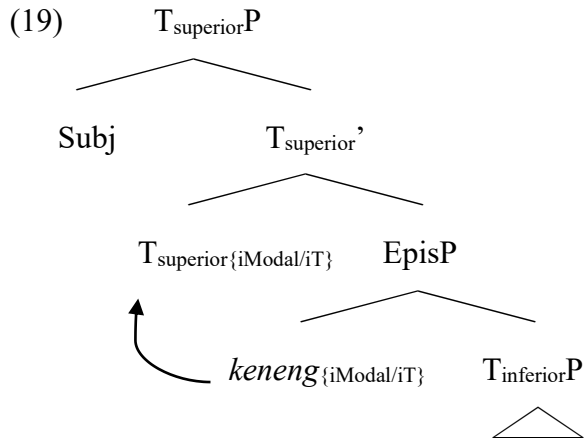
yinggai? The answer is quite simple: *keneng* is a monosemic EMV hence it does not need to receive a specific semantic interpretation through syntactic operations. In contrast to *yinggai*, which can be used to express Obligation, *keneng* is purely epistemic:

- (17) a. 他可能吃药。
 Ta kenengchi yao.
 he may^E eat medicine
 ‘It is possible that he will take the medicine.’
- b. 他应该吃药。
 Ta yinggai chi yao.
 he should^D/may^E eat medicine
 ‘He is obligated to take the medicine.’/ ‘It is possible that he will take the medicine.’

As shown above, (17a) has only one unambiguous reading, while (17b) with *yinggai* can have two. Our conclusion above seems to be able to predict this correctly. Since it is unnecessary for *keneng* to Agree with T head, the position it occurs cannot be a criterial position. Therefore, raising *keneng* to a position higher than the subject should be generally allowed. Concerning exact landing site of *keneng*, I will discuss in the remainder of 3.1. In short, the distribution of *keneng* is very free.

One may wonder how can we derive the subject-*keneng* order like in (2a) (repeated as (18)) if *keneng* does not have to Agree with T heads. Potentially, assuming *keneng* stays in-situ or raises to T_{superior} both leads us to the right output, illustrated as (19).

- (18) 他可能是个好人。
 Ta kenengshi ge haoren.
 he may^D COP CL good-person
 ‘He may be a good person.’



I propose that *keneng* raises to T_{superior} in the absence of an overt subject. As I have argued in 2.1.1, there are two means to strengthen the weak T. First, following the standard POP(E) framework in Chomsky (2013, 2015), there must be an overt subject in [SPEC, T] to label the entire TP with sharing features between the subject and T head. Second, as proposed in Miyagawa, Wu and Koizumi (2019), the ‘weakness’ of functional heads like T or C can be eliminated by the attachment of a functional element which has the same feature as the head. With these two methods in mind, the sequence illustrated in (18) can be duly attributed to either one of them.

If we assign the ‘strengtheners’ role to an overt subject, the TP can then be labeled as <SPE, SPE> in the sense of Yang and Lin (2020). On the other hand, if we adopt the second method by assuming T is supported by the raising of modal verb, substantialized by the raising of *keneng* in (19), the final output would be the same. It is important to notice that the {Modal} feature embedded in *keneng* is interpretable, i.e., {iModal}, since it only has one meaning. Hence, even if *keneng* is raised to T_{superior} , no feature-valuation is expected. Yet, it has the same feature the T head has, which enables it to strengthen the weak T head according to Miyagawa, Wu and Koizumi’s (2019) analysis.

Before I end this subsection, I find it necessary to clarify the situation in which *yinggai* externally merges to $T_{\text{superior}}P$ and probes T_{superior} in a non-foot driven way (i.e., the standard Probe-Goal relation formulated in Chomsky 2000, 2004). In that case, *yinggai* seems to be able to have its uninterpretable feature properly valued in a pre-subject position without

moving out of a criterial position, whereas such a derivation fails to generate correct sentences since *yinggai* cannot occur at a position higher than the subject. To deal with this puzzle, I propose that there are two latent factors causing the illegitimacy of the externally-merged *yinggai* approach: (i) it is not crash-proof; (ii) the Agree relation in question may be interrupted by Transfer.

First, in contrast to the proposed analysis in this subsection, if we assume *yinggai* externally merges to $T_{\text{superior}}P$, nothing then stops a lower polysemantic root modal from moving to T_{superior} directly (with *yinggai* first merging to $T_{\text{inferior}}P$, the raising of lower modals is blocked by the Relativized Minimality). Therefore, the T_{superior} will be rendered inert (EPP feature gets valued) and can no longer be probed as a Goal. And *Yinggai* bearing {uModal} cannot be valued in the subsequent derivations, which ultimately crashes.

Second, assuming *yinggai* externally merges to a position before the subject implies that *yinggai* merges to either $T_{\text{superior}}P$ or TopP. On the contrary, regardless the subject is topicalized or not, the assumption that *yinggai* internally merges to T_{superior} can always generate the correct word order. However, if *yinggai* externally merges to TopP, it not only fails to satisfy the formal requirement that EMVs must take a truth condition (TP) as complement (cf. 3.1.3 for detailed discussion), but also a cross-phase Agree relation may be halted if the Goal and the Probe is not transferred simultaneously. Hsieh's (2005) endeavor in determining the phase head in the C domain suggests that Force, Mood and Fin are phase heads, and if their phase-hood is defensible, *yinggai* externally merges to TopP may not be able to probe T_{superior} as its Goal since the latter gets transferred as soon as Fin, which is commonly assumed to be located below Top, is introduced.

In sum, the asymmetry between *yinggai* and *keneng* with regard to their distribution circa a subject can be reduced to their feature specification. That an Agree relation must be held between the polysemantic *yinggai* and a T head, which renders the position of *yinggai* a criterial position from which movements are blocked. On the other hand, *keneng* is allowed to appear at a pre-subject position because it is monosemic thus has no obligation to Agree with T head to determine a specific meaning; no criterial position is in presence.

3.1.2 EMVs at Sentential-final position

Another piece of evidence that solidifies my argument in this section is that *yinggai* and *keneng* behave differently in the so-called ‘Sentential-final EMV structure. As previously discussed in 2.3, although *keneng*, together with the subject, can be uttered at the sentential-final register, I find that the sentential-final *yinggai* is imposed with some constraints (see also Lin and Tang 1995). Consider (20).

- (20) a. 去北京了他可能。
Qu Beijingle ta keneng.
go BeijingASP he may^E
‘He might have gone to Beijing.’
- b. 去北京了可能他。
Qu Beijingle keneng ta.
go BeijingASP may^E he
‘He might have gone to Beijing.’
- c. 去北京了他应该。
??Qu Beijingle ta yinggai.
go BeijingASP he may^E
‘He might have gone to Beijing.’
- d. 去北京了应该他。
*Qu Beijingle yinggai ta.
go BeijingASP may^E he
‘He might have gone to Beijing.’

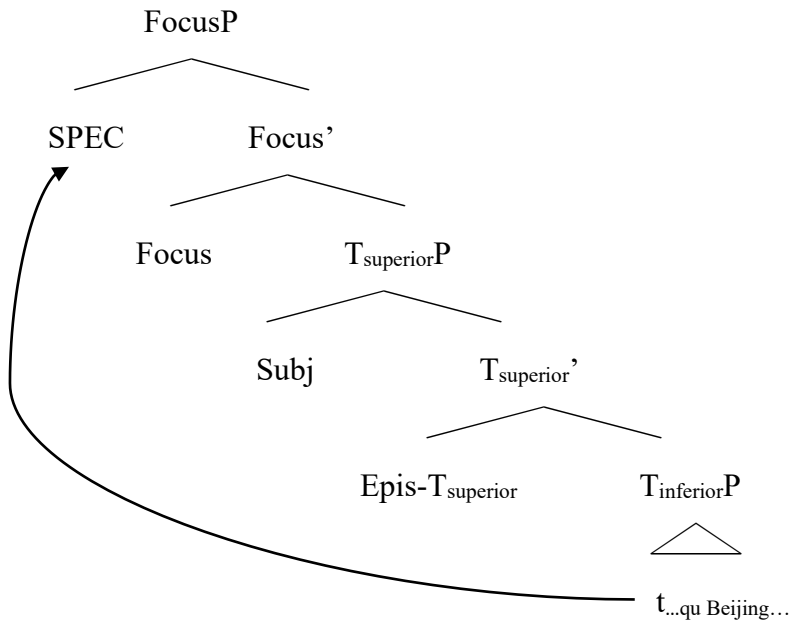
According to my informants, northern and south-west speakers are inclined to justify the acceptability of (20a-b) and (21a) and acknowledge that they do speak like that in the context of colloquial conversations, while south-east speakers claim that they seldom put the EMVs

at the last slot of a sentence. Interestingly, Mandarin Chinese, often divided into several sub-dialectal groups, is natively spoken in north and south-east China. Therefore, the uneven judgement on the acceptability of sentential-final EMVs may rest on the difference between Mandarin Chinese and other regional dialects.

Importantly, another asymmetric behavior of *keneng* and *yinggai* comes into sight. In (20a-b), note that *keneng* and the subject can appear at the sentential-final position simultaneously regardless of the linear order. On the other hand, although not being the first choice, *yinggai* and the subject can also occur at such position. However, in contrast to *keneng*, *yinggai* cannot precede the subject, as in (20c-d). In the remainder of this subsection, I will first discuss what syntactic operation is involved in deriving such word order. After that, I will address the asymmetry shown in (20) and entertain the Agree-based analysis proposed in 3.1.1.

There are two ways to derive the sentential-final EMV structure: (i) the subject-EMV compound stays in-situ while the eventual complement gets raised to the left periphery, i.e., VP-fronting; (ii) the subject-EMV compound raises to the left periphery. Let us now consider the first possibility:

(21) *Subject-EMV in-situ*



The landing site for the raising of ‘*qu Beijing*’ is assumed to be [SPEC, FocusP]. This move is motivated by the fact that the sentential-final EMV structure seems to be triggered by a sentential-*le*, which is argued to be a Focus marker by Wang (2018). As illustrated in (22a-d), if we erase sentential-*le* from such structures, grammaticality goes down:

- (22) a. 去了北京他可能。
 ??Qu-le Beijing ta keneng. *Verbal-le*
 go-ASP Beijinghe may^E
 ‘He might have gone to Beijing.’
- b. 去过北京他可能。
 *Qu-guo Beijing ta keneng. *Experiential-guo*
 go-ASP Beijinghe may^E
 ‘He might have gone to Beijing.’
- c. 是个好人他可能。
 ?Shi ge haoren ta keneng. *Unmarked copula*

COP CL good-person he may^E

‘He might be a good person.’

d. 会开车他可能。

*Hui kaiche ta keneng.

Root modal

can^{Dy} drive he may^E

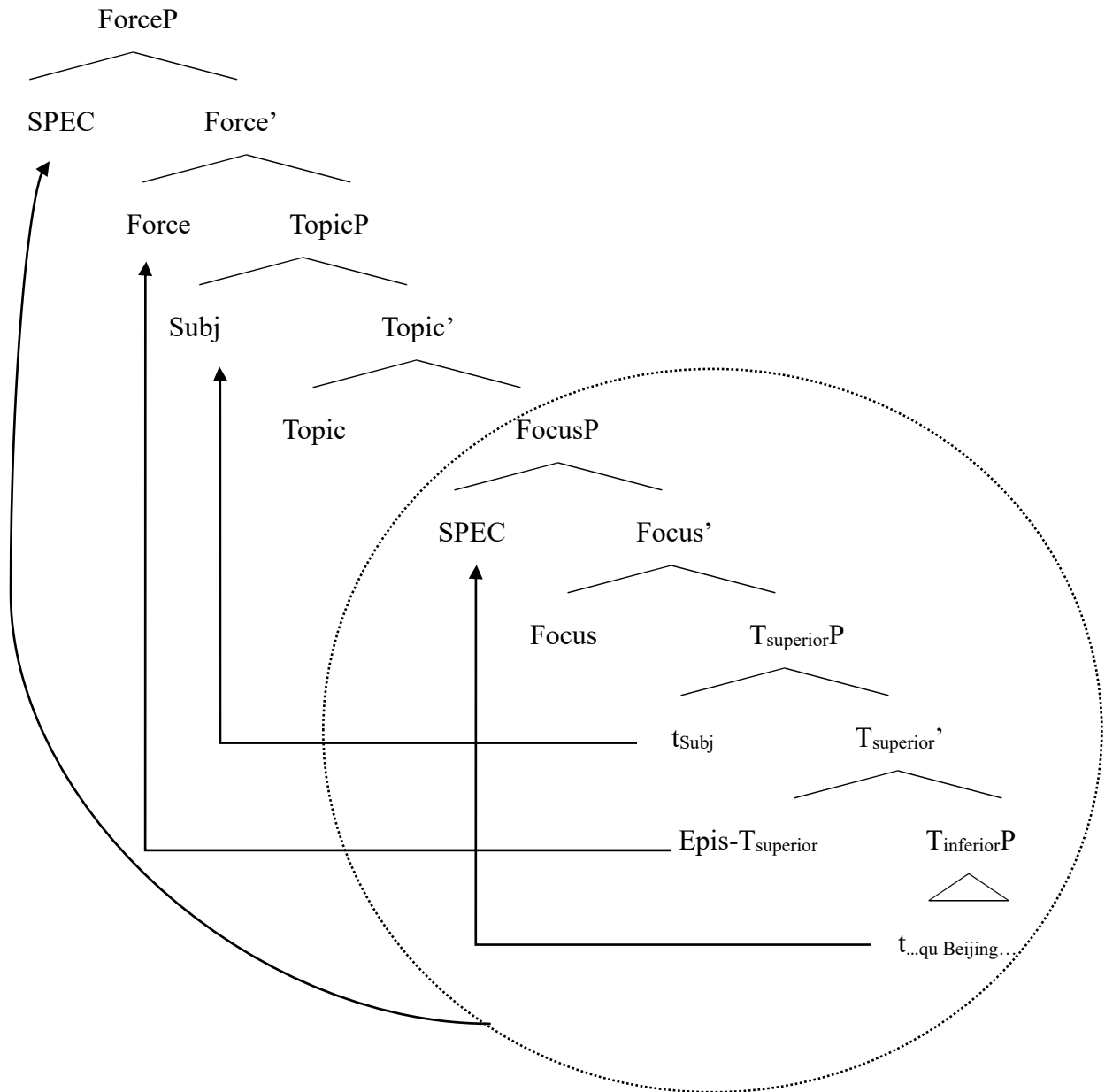
‘He might be able to drive.’

The ill-formed clauses in (22) suggest that the postposed subject-EMV compound may not be as properly licensed as their counterparts associated with sentential-*le*. And assuming that what follows EMV in (20) moves to [SPEC, FocusP] correctly produces the right word order. Furthermore, since both focal/transitional (see Soh and Gao 2006) and perfectivity reading of (20) is encoded by sentential-*le*, the intuition I briefly discussed in 2.3 that sentential-*le* may originate in a position below the complementizer layer (e.g., AspP) and merge to Focus⁰ subsequently seems to be appealing, because perfectivity is arguably encoded in the inflectional layer in the sense of Rizzi (1997).

Alternatively, it is also possible to derive the word order in question by raising the subject-EMV to the C domain. Consider (23).

In (23), the event ‘*qu Beijing*’ raises to [SPEC, FocusP] just like (20c-d). However, instead of being in-situ, the subject and EMV raise to an even higher position. Finally, for the purpose of linearizability, the entire FocusP would raise to [SPEC, FP] in a way Hsieh and Sybesma (2011) and Pan (2021) have proposed.

(23) *Subject-EMV raises*



As for the specific locus of raised subject and EMV, I argue the subject would be raised to [SPEC, TopP] since the event '*qu Beijing*' can be construed as a comment on *ta*, complying to the definition of Top in Rizzi (1997). Raised EMV can be taken as the head of ForceP, following Cinque (1999) who argues that epistemic adverbs located in TP may eventually move to C domain. It is also suggested in S-Y. Lin (2012: 14) that epistemic adverb in

Chinese must undergo feature-movement towards ForceP to value the {uForce} feature of it, while epistemic modal verb can optionally do so. By either means, {uForce} will be rendered as {iDeclarative}. Since the feature-movement is available, and there is nothing preclude the Epistemic-to-Force movement, I argue that the locus of EMV in (23) could be Force. Recall EMV can appear before or after the subject even in a sentential-final EMV structure, as illustrated in (20a-b). I argue such linear realization mirrors Haegeman's (2002: 164) topology of the left periphery: Top and Foc can be higher than Force, which can be schemed as follows (see 2.3 for my discussion in support of her proposal):

(24) Sub > (Top) > Foc > Force > ... > TP

Although both (21) and (23) seem to be capable of deriving the correct output, I would like to assume (23) to be the more efficient one to deal with the central argument of this subsection. And if the structure in (23) is defensible, we may obtain a direct analysis for the asymmetry exhibited in (20): the movement of *yinggai* breaks away from the restraint of Criterial position.

As I have argued in 3.1.1, the polysemantic *yinggai* must have its {uModal} feature valued via Agree with T, which prohibits it from further operations. Thus, the raising of *yinggai* in (24) will be ruled out. And I argue the assumption that the right dislocation of the subject and *yinggai* instantiates movement is not unmotivated, since it entails the operation of Defocalization. Cheung (1997, 2005, 2009) argue there is a special word order attested in Cantonese, a dialect of Chinese, that often observed in colloquial/spontaneous conversations: namely the SFP shows at the clause-internal position. Consider (25):

(25) *Extracted from Cheung (2005:1), glosses are mine*
 [Jatbou dingsigei] lo [keoi] [mai-zo]. Obj-SFP-Subj-V
 one-CL TV SFP he buy-ASP
 'He bought a TV'

In (25), the subject and the verb are dislocated to the right side of the SFP in terms of superficial order. However, Cheung (2009) argues that such uncanonical word order comes from the leftward movement of the β -part (pre-SFP fragment) out of the α -part (post-SFP fragment) which is a result of focus movement. In addition to Cheung's investigations, Lee (2017) further examines a variant of the right dislocation of Cantonese that undergoes the process of Defocalization:

(26) *Extracted from Lee (2017: 60), glosses are mine.*

[Keoi] [jau mou mai] gaa [ce]
 he have have-not buy SFP car
 'Has he bought the car or not?'

According to Lee (2017: 61), the so-called β -part is defocalized by raising to [SPEC, DefocusP] in the C domain, and DefocusP is a projection lower than the SFP. The remnant TP then undergoes movement to a position higher than the SFP to generate the surface order. It should be pointed out that Mandarin Chinese seems to have a narrower range of legit rightwards dislocatable elements compared to Cantonese, as the data in (27) suggest:

(27) a. *NP-complements*

他有没有买啊，那辆车？

*[Ta you meiyou mai t_i] a [naliang che]_i.
 he have have-not buy SFP that-CL car
 'Has he bought the car or not?'

b. *CP-complements*

你相信吗，他买了车？

*[Ni xiangxin t_i] ma [ta mai-le che]_i.
 you believe SFP he buy-ASP car

‘Do you believe that he bought a car?’³¹

c. *Adverbials*

张三会去北京吧，大概。

??[Zhangsan hui qu Beijing] ba [dagai]
Zhangsan will^D go Beijing SFP probably

‘Zhangsan will probably go to Beijing.’

d. *Prepositional Adjuncts*

他买新衣服了，在商场。

?*[Ta mai xinyifu] le [zai shangchang].
he buy new-cloth SFP at store

‘He bought new clothes at the store.’

e. *Root modals*

他出去玩了，能。

*[Ta chuqu wan] le [neng].
he go-out play SFP can^D

‘He is allowed to go out and play.’

Despite (27a-e) are hardly acceptable for Mandarin speakers; their Cantonese counterparts are claimed to be attested in Lee (2017: 62). Yet, although Mandarin Chinese has a smaller inventory in terms of possible right dislocations, the attested cases in (20) are still very similar to the Defocalization proposed in Lee (2017); what is important is that the sentential-final EMV-subject compound is subject to locality constraints:

(28) a. 买的盒子坏了，可能他。

*[t_i Mai-de hezi huai] le [keneng ta]_i.
buy-DE box break SFP may^E he

³¹ (27b) can be acceptable with a full pause after the SFP, and in that case the two fragments must be taken to be independent clauses.

Intended reading: ‘It is possible that the box he bought is broken.’

b. 如果去北京了, 他可能。

*[Ruguo t_i qu Beijing] le [ta keneng]_i...
if go Beijing SFP he may^E

Intended reading: ‘If he may have been to Beijing...’

(29) 自己是谁都不知道呢, 可能他。

[Ziji_i shi shei dou bu zhidao]ne [keneng ta_i].
self COP who even not know SFP may^E he

‘He may even don’t know who himself is.’

As suggested in (28), the right dislocation of EMV-subject is subject to island effects like Complex-NP and Adjunct. On the other hand, it is shown in (29) that Reconstruction effect, which is considered to be a trait of A’-movement in Huang et al. (2009), displayed by the anaphor-binding relation is observed. The fact given above plausibly suggests that the sentential-final EMV-subject patterns with the Defocalization of Lee (2017), that they similarly involve movement to the left periphery. In addition, the dislocation of EMV-subject also fits in the notion of Defocalization with respect to the interpretiveness, as they exhibit focus-resist property in post-SFP position. Consider the question-answer tests below:

(30) Q: 他去北京了吗?

Ta qu Beijing le ma?
he go Beijing SFP SFP
‘Did he go to Beijing?’

A: 去北京了, 他可能。

#Qu Beijing le ta keneng.
go Beijing SFP may^E
‘He may have been to Beijing.’

(31) 喜欢吃牛肉呢, 可能谁。

#Xihuan chi niurou ne, keneng shei.
 like eat beef SFP may^E who
 ‘Who might be the one that likes to eat beef?’

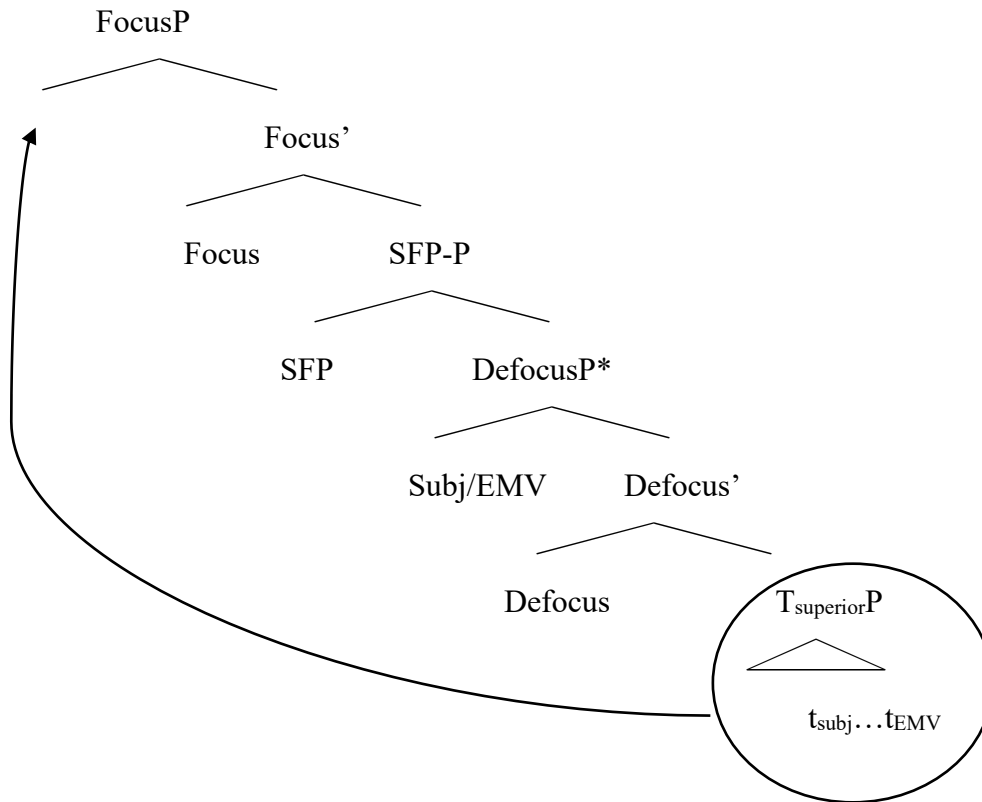
As suggested in Law (2003), the answer to a question inherently manifests informational focus, thus (30A) being infelicitous falls right in the Defocalization-based predication. Furthermore, following Rochement (1986) who claims *wh*-phrases bears focus by nature, the infelicity of (31) is then explained, since the *wh*-subject is right dislocated (defocused).

In terms of metrical presentation, the last morpheme of the right-dislocated compound can be pronounced in neutral tone regardless of their original tones, whereas neutral-toned pronunciations of them in the canonical word order are quite odd and unnatural. Note that the notion neutral-tone is sometimes referred to as ‘light tone’, meaning the Chinese characters bearing neutral tone are supposed to be read lightly and shortly, which can be realized through the externalization of the Defocalization process:

- (32) a. 去北京了, 他可能。
 Qu Beijing le ta keneng (néng→neng).
 b. 去北京了, 可能他。
 Qu Beijing le keneng ta (tā→ta).
 c. 他可能去北京了。
 ta (#tā→ta) keneng (#néng→neng) qu Beijing le.

In short, the sentential-final EMV-subject compound can be treated as the relatively rare case of Defocalization in Mandarin Chinese, according to which both the EMV and the subject undergo movement to the left periphery, just like the structure of (24) depicts. And if the notion of Defocalization is introduced, (24) can be modified as in the form of (33):

(33) *Defocalization of EMV-subject* ([*] indicates the possibility of iteration)



The structure in (33) differs slightly from Lee's (2017: 83). In his work, in order to ensure enough rooms for multiple defocused elements (can be more than one constituent), a multiple-SPEC assumption is made. As he admits this is barely a good solution to the situations in which multiple elements are defocused. In particular, when a verb and a sentential adverbial get defocused (possible in Cantonese, but not in Mandarin), assuming they are specifiers of the same head would lead to an unideal conclusion that they are syntactically related. Therefore, I assume there can be more than one DefocusP, contra the oneness of FocusP (see Rizzi 1997: 290).

Returning to the asymmetry between *yinggai* and *keneng* at issue, whether one selects (23) or (33) the ill-formedness of (20b-c) is naturally accounted for since the movement of *yinggai* out of T^{superior}P is generally prohibited.

Thus, there are several reasons to dispense with the structure in (21): (i) it wrongly rules out a clause like (20b) in which *keneng* precedes the subject in the sentential-final register.

According to (21), there will be no proper place for *keneng* where it overtops the subject; (ii) it loses the account for the defocused nature of the *keneng-ta* compound semantically and phonologically; (iii) it fails to predict the locality constraint (indicating movement takes place) imposed on the rightmost *keneng-ta*.

The remaining question of this subsection is: why is (20c) better than (20d)? The reason is simple: if the movement of defocalization in (20c) does not take place, *yinggai* properly follows the subject, which is the correct word order. By contrast, (20d) is ungrammatical even if the movement is restored. Therefore, (20c) suffers from only one grammatical anomaly, whereas (20d) two.

3.1.3 EMVs and *wh*-words

In the last subsection, I have examined the asymmetry between *keneng* and *yinggai* with respect to the possibility of appearing at the sentential-final position and concluded that this again exemplifies their difference in the matter of Agreeing with T and feature valuation. In this subsection, I will investigate another asymmetric property of them: the cooccurrence of EMVs and *wh*-words. First, let us take a closer look at the case of *wh*-arguments:

- (25) a. 谁可能离开了?
 Shei keneng likai-le?
 who may^E leave-ASP
 ‘Who might have left?’
- b. 可能谁离开了?
 Keneng shei likai-le?
 may^E who leave-ASP
 ?Reading a: ‘Who might have left?’
 Reading b: ‘Someone might have left.’
- (26) a. 谁应该离开了?
 ??Shei yinggai likai-le?

- who may^E leave-ASP
 ‘Who might have left?’
- b. 应该谁离开了?
 *Yinggai shei likai-le?
 may^E who leave-ASP
 ‘Who might have left?’
- (27) a. 他可能喜欢什么?
 Ta keneng xihuan shenme?
 he may^E like what
 ‘What he may like?’
- b. 可能他喜欢什么?
 Keneng ta xihuan shenme?
 may^E he like what
 ?Reading a: ‘What he may like?’
 Reading b: ‘He might like something.’
- (28) a. 他应该喜欢什么?
 Ta yinggai xihuan shenme?
 he may^E like what
 ‘What he may like?’
- b. 应该他喜欢什么?
 *Yinggai Ta xihuan shenme?
 may^E he like what
 ‘What he may like?’

As in (25-28), *keneng* and *yinggai* are in general allowed to cooccur with *wh*-arguments, which can be either subjects or objects (however, the grammaticality would decrease if the subject of *yinggai* is a *wh*-word, as illustrated in (26a)). The ungrammaticality of (26b) and (28b) can be resorted to the fact that *yinggai* must be halted at the criterial position which I

have discussed in 3.1.1. Note that with *keneng* appearing at the sentential-initial position, an existential reading of the *wh*-words is also available, as in (25b) and (27b). I follow S-Y. Lin (2012) who assumes that such existential reading may be attributed to Feature Interpretability Contradiction in ForceP. According to him, *wh*-words and epistemic modals would intend to determine the illocutionary force of the clause respectively. Furthermore, he assumes that sentential-initial EMV is externally merged as the head of ForceP, which locally values the {uForce} feature as {iEpistemic}. Thus, if we follow Tsai (1999) assuming the *wh*-construal is formed through unselective binding, and an unbound *wh*-word is indefinite by nature, the existential reading of (25b) and (27b) then arises³². In this spirit, the ungrammaticality of (26b) and (28b) (notice that neither *wh*-construal nor existential reading is possible), is

³² Lin takes the *wh*-construal to be illicit when a EMV appear at sentential-initial position. However, clauses like (25b) and (27b) may somehow allow *wh*-construal reading. It is also very interesting that the example he uses to demonstrate the exclusive existential reading of sentential-final EMV can be construed as *wh*-interrogatives if there is an SFP *ne*. By contrast, as Lin predicts, epistemic modal adverbs always block *wh*-construal regardless the presence of *ne*.

- (i) 可能约翰买过什么呢?
 Keneng Yuehan mai-guo shenme *(ne)
 may^E John buy-ASP what SFP
 ‘What may John have bought?’
- (ii) 也许约翰买过什么呢。
 Yexu Yuehan mai-guo shenme (ne)
 probably John buy-ASP what SFP
 ‘John perhaps bought something?’
 *‘What did John probably buy?’

One possible analysis is that a sentential-initial EMV externally merges to ForceP optionally (as shown in 3.1.1, no look-ahead restriction is imposed on *keneng*). In the case of existential reading, Lin’s proposal presents a reasonable solution; while EMV may originate inside T_{superior}P first and raise to ForceP after the {uForce} feature is valued as {iInterrogative} by the Q operator. At that point, no feature-valuation is necessary. The conflict between {iInterrogative} and {iEpistemic} does not seem to cause a problem, since they can co-exist crosslinguistically:

- (iii) What is he probably doing?

naturally accounted for: the {Epistemic} feature of *yinggai* is uninterpretable, hence it not only fails to value {uForce} but also violates Full Interpretation if it occupies the sentential-initial position by an external merger with ForceP.

Keneng and *yinggai* exhibit a more complex pattern regarding the *wh*-adverbials. In (29-32), I will present examples containing *weishenme* ‘why’ and *zenme* ‘how’ which are argued to be sentential operators or vP-modifiers on the basis of their distributions and specific functions by Tsai (2008b).

(29) *Denial zenme*

- a. 我怎么可能被开除呢?

Wo zenme kenenghui bei kaichu ne?
 I how^{denial} may^E will^D PASS fire SFP
 ‘How come that I might get fired?/ I shouldn’t be fired.’

- b. 怎么可能我会被开除呢?

Zenme keneng wo hui bei kaichu ne?
 how^{denial} may^E I will^D PASS fire SFP
 ‘How come that I might get fired? / I shouldn’t be fired.’

- c. 怎么应该我会被开除呢?

*Zenme yinggai wo hui bei kaichu ne?
 how^{denial} may^E I will^D PASS fire SFP
 ‘How come that I might get fired?/I shouldn’t be fired.’

- d. 我怎么应该会被开除呢?

*Wo zenme yinggai hui bei kaichu ne?
 I how^{denial} may^E will^D PASS fire SFP
 ‘How come that I might get fired?/I shouldn’t be fired.’

(30) *Reason weishenme*

- a. 他为什么可能被开除了?

Ta weishenme kenengbei kaichu le?

he why^{reason} may^E PASS fire ASP

‘What might be the reason that he got fired?’

- b. 他可能为什么被开除了?

Ta keneng weishenme bei kaichu le?

he may^E why^{reason} PASS fire ASP

‘What might be the reason that he got fired?’

- c. 为什么他可能被开除了?

Weishenme ta keneng bei kaichu le?

why^{reason} he may^E PASS fire ASP

‘What might be the reason that he got fired?’

- d. 他为什么应该被开除了?

*Ta weishenme yinggai bei kaichu le?

he why^{reason} may^E PASS fire ASP

‘What might be the reason that he got fired?’

- e. 他应该为什么被开除了?

*Ta weishenme yinggai bei kaichu le?

he why^{reason} may^E PASS fire ASP

‘What might be the reason that he got fired?’

- f. 为什么他应该被开除了?

*Weishenme ta yinggai bei kaichu le?

why^{reason} he may^E PASS fire ASP

‘What might be the reason that he got fired?’

(31) *Instrumental/manner zenme*

- a. 他可能 (他) 会怎么(样)解决问题?

Ta keneng (ta) hui zenme (yang) jie jue wenti?

he may^E he will^D how-(manner) solve problem

‘By what means (*in what manner) it is possible for him to solve the problem.’

- b. 他应该 (他) 会怎么(样)解决问题?

Ta yinggai (*ta) hui zenme(yang) jiejie wenti?
 he may^E he will^D how-(manner) solve problem
 ‘By what means (*in what manner) it is possible for him to solve the problem.’

(32) *Purpose weishenme*

a. 他可能(他)会为什么而战?

Ta keneng(ta) hui weishenme er zhan
 he may^E he will^D for-what then fight
 ‘For what purpose that he might fight?’

b. 他应该(他)会为什么而战?

Ta yinggai (*ta) hui weishenme er zhan
 he may^E he will^D for-what then fight
 ‘For what purpose that he might fight?’

As illustrated in (31-32), *yinggai* and *keneng* parallel with each other with regard to instrumental/manner *zenme* (that only the instrumental reading is plausible, as Tsai 2008b predicts) and purpose *weishenme*. This observation is not surprising since those *wh*-adverbials are argued to be *vP*-modifiers located below TP in Tsai (2008b). Still, the acceptability plummets once *yinggai* occupies the pre-subject position, as in (31b) and (31b). By contrast, *weishenme* and *zenme* in C domain differentiate *yinggai* from *keneng* sharply as shown in (29-30), specifically *yinggai* is in general not allowed to cooccur with *wh*-adverbials.

First, let us consider the relation between EMVs and Reason-*weishenme*. As shown in (30d-f), *yinggai* is generally prohibited when a Reason-*weishenme* is present. The ungrammaticality of (30e), in which *yinggai* is succeeded by *weishenme*, may be clarified by the same analysis proposed for (26b) and (28b) that *yinggai* occurring at CP is barred according to the freezing effect. Yet, the cooccurrence of *keneng* and Reason-*weishenme* is much more desirable, as in (30a-c). This distinction can be resorted to the requirement of the valuation of {uForce} again, as argued in S-Y. Lin (2012). In the early research of Lyon (1977), the notion of modality is divided into subjective-modal and objective-modal. The

crucial difference between them is that a subjective-modal is associated with the illocutionary force, whereas an objective-modal is infused into truth-conditional content. Specifically, subjective-modal would modify an entire utterance, typing it as a conjecture. On the other hand, object-modal only expresses the speaker's judgments about a truth-condition, where the utterance is still declarative. Based on this dichotomy, Huitink (2008) proposes structural requirements for both of them: (i) subjective-modal takes an entire CP as complement; (ii) objective-modal takes a truth-conditional maximal projection (i.e., TP) as complement. Lin then proposes a Syntax-semantics Structural Requirement:

(33) *Syntax-semantics Structural Requirement*

Epistemic Modal Verb	{	CP	}	→Subjective Conjuncture
	{	TP	}	→Objective Conjuncture

Furthermore, Tancredi (2007) observes that only subjective-modals would trigger the Epistemic Containment Principle proposed in von Stechow and Iatridou (2003):

(34) *Epistemic Containment Principle (EPCP)*

Epistemic modals cannot be scoped by a quantifier.

Consider the following examples, in which a subjective modal (like an epistemic adverb) may cause infelicitous outcomes, but an objective modal is not subject to the EPCP. As (35a) and (36a) suggest, EPCP is induced in both English and Japanese when a subjective modal is involved, on the other hand, no EPCP is detected once the modal is an objective one, as in (35b) and (36b).

(35) *English*

- a. # (As far as I know), every kind of tree is **perhaps** maple.
- b. (Objectively speaking), every kind of tree **may be** maple.

(36) *Japanese*

- a. #すべての木がもしかしたら楓である。
Subete-no ki-ga moshikashitara kaede dearu.
all-GEN tree-NOM perhaps maple COP
'Every kind of tree is perhaps maple.'
- b. (客観的に見て) すべての木が楓であるかもしれない。
(Kyakkantekini mite) subete-no ki-ga kaede dearu
objectively look all-GEN tree-NOM maple COP
kamoshirenai.
may
'(Objectively speaking), every kind of tree may be maple.'

In the same spirit of Tancredi (2007), S-Y. Lin (2012: 12) proposes that the EPCP is only partially valid as to Chinese modals. Specifically, Scope-bearing Quantifiers (SBQ) can scope over the epistemic modal verb *keneng*, but cannot scope over the epistemic adverb *yexu*. Consider the following examples:

(37) *Universal Dou-quantification*

- a. 所有人都可能离开了
Suoyou-ren dou keneng lai-le.
every-man all may^E come-ASP
'For every x, x is a person, x may have come.'
- b. 所有人都也许离开了
*Suoyou-ren dou yexu lai-le.
every-man DOU probably come-ASP
'For every x, x is a person, x may have come.'

(38) *Focus*

- a. 只有可能他去过东京。

Zhiyoukeneng ta qu-guo Dongjing.
 only may^E he go-ASP Tokyo
 ‘It is only possible that he once went to Tokyo.’

b. 只有也许他去过东京。

*Zhiyou yexu ta qu-guo Dongjing.
 only probably he go-ASP Tokyo
 ‘It is only possible that he once went to Tokyo.’

(39) *Negation*

a. 他不可能去了东京。

Ta bu keneng qu-le Dongjing.
 he not may^E go-ASP Tokyo
 ‘It is impossible that he went to Tokyo.’

b. 他不也许去了东京。

*Ta bu yexu qu-le Dongjing.
 he not probably go-ASP Tokyo
 ‘It is impossible that he went to Tokyo.’

It is rather obvious that EMV *keneng* can be scoped by a quantifier, as exemplified in (37a), (38a) and (39a), whereas the epistemic adverb *yexu* is strictly ruled out from such configuration, as in (37b), (38b) and (39b).

Aiming to explain the asymmetric EPCP effect demonstrated above, S-Y. Lin presents a speculation that SBQs would block the feature-movement of {Epistemic} to ForceP based on a revised version of the Generalized Relativized Minimality of Rizzi (2004), according to the revised classification {Epistemic} is assumed to be a quantificational feature. Therefore, a quantificational feature would intervene between ForceP and the adverb, as a result no epistemic reading will be generated. This speculation also seems to accord with Tancredi’s (2007) observation, that modal adverbs are actually subjective modals. As to the mechanism of such feature-movement, S-Y. Lin proposes as follows:

- (40) ‘[Epistemic] feature moves to check/value the [uForce] feature in ForceP to express speaker’s subjective conjecture.’

If his analysis is correct, one may predict that *yinggai* should behave on par with *keneng* instead of a subjective modal. However, it is quite surprising that *yinggai* suffers from most of the EPCP effects discussed above, which is overlooked in S-Y. Lin’s investigation:

- (41) *Universal Dou-quantification*

所有人都应该离开了

Suoyou-ren dou yinggai lai-le.
 every-man all probably come-ASP

‘For every x, x is a person, x may have come.’

- (42) *Focus*

只有应该他去过东京。

*Zhiyou yinggai ta qu-guo Dongjing.
 only may^E he go-ASP Tokyo

‘It is only possible that he once went to Tokyo.’

- (43) *Negation*

*他不应该去了东京。

Ta bu yinggai qu-le Dongjing.
 he not may^E go-ASP Tokyo

‘It is impossible that he went to Tokyo.’

Among the three kinds of SBQs appear in (37-39), neither can Focus nor Negation scope over *yinggai*. The only exemption is related to *dou*-quantification as illustrated in (41). Nonetheless, in addition to S-Y. Lin’s generalization, I would like to further provide a few pieces of evidence to justify his proposal:

- (44) *Contrastive Focus*

- a. 他猪肉可能吃, 牛肉不吃。
 Ta zhurou keneng chi, niurou bu chi.
 he pork may^E eat beef not eat
 ‘He may eat pork but not beef.’
- b. 他猪肉应该吃, 牛肉不吃。
 *Ta zhurou yinggai chi, niurou bu chi.
 he pork may^E eat beef not eat
 ‘He may eat pork but not beef.’

(45) *Quantified nominals*

- a. 极少有人可能喜欢他。
 Jishaoyou-ren keneng xihuan ta.
 few-person may^E like he
 ‘Few people may like him.’
- b. 极少有人应该喜欢他。
 *Jishaoyou-ren yinggai xihuan ta.
 few-person may^E like he
 ‘Few people may like him.’

(46) *Ruguo-conditional*

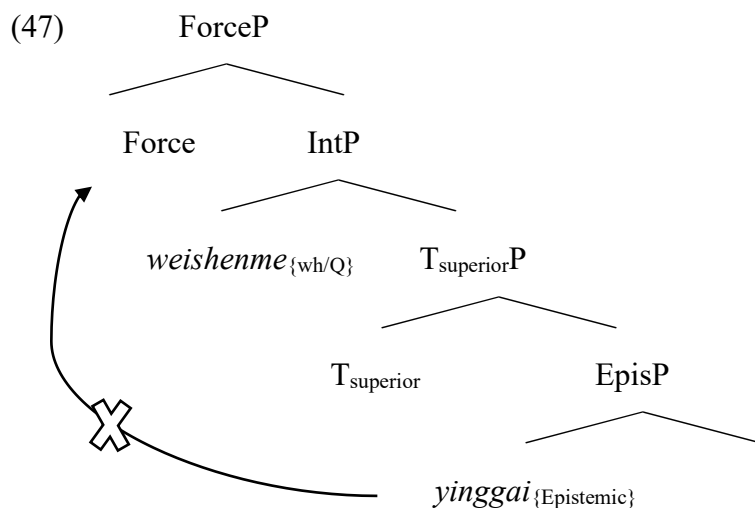
- a. 如果他可能喜欢我。
 Ruguo ta keneng xihuan wo.
 if he may^E like I
 ‘If it is possible that he likes me (I will make a move).’
- b. 如果他应该喜欢我。
 *Ruguo ta yinggai xihuan wo.
 if he may^E like I
 ‘If it is possible that he likes me (I will make a move).’

In (44), the object is fronted to a pre-verbal position. Such movement is assumed to be

triggered by Case requirement in Zhang (1998), while Shyu (2001) argues that it is a focus movement driven by a strong {Focus} of F. Following Shyu's analysis, the fronted object undergoes movement to [SPEC, FP_{+Focus}] checking {+Focus} of the head F. The acceptability of (44a) would in turn suggest that *keneng* is not sensitive to a Focus SBQ/EPCP effect. However, it becomes unacceptable once the Focus SBQ appears before *yinggai*, as (44b) shows.

A similar pattern is manifested by (45), where a *dou*-less quantification occurs before EMVs. Interesting enough, even though *yinggai* does not escape from the criterial position, (45b) is still hardly acceptable. At last, *yinggai* and *keneng* are very different in a *ruguo*-conditional, as in (46); despite that *keneng* is compatible with *ruguo*-conditionals, *yinggai* is not. Note that Heim (1982) points out that conditionals have universal force inherently, in that the ungrammaticality of (46b) naturally follows because *yinggai* is again scoped over by an SBQ.

All the evidence shown above explicitly supports the concept that *yinggai* is on par with a subjective modal hence it must undergo feature-movement to ForceP since its category-movement is prohibited as we have seen in 3.1.1. If S-Y. Lin's revised feature-classification is tenable, the ungrammaticality of (30d-f) can then be rationalized on account of the Generalized Relativized Minimality:



Alternatively, the feature-movement of {Epistemic} is also ruled out under our analysis formulated in 3.1.1, that the polysemantic *yinggai* bears the uninterpretable {uModal}. Since {uForce} cannot be properly valued by another uninterpretable feature, the only option left is to assume *yinggai* first raises to T to value {uModal} via Agree, and after the valuation it further invokes feature-movement to ForceP. The question is, the freezing effect induced by the Criterial position is well-known to be applicable to the element carrying such criterial feature ({uModal} in this case), but how about the feature per se (this question is not addressed in Rizzi 2016)? Is it available for further feature-movement or not? I tentatively assume such feature-movement from a criterial position should be allowed. Since if no feature-movement from the *yinggai*-T_{superior} compound is permitted, then it would be impossible to derive the intended subjective modal reading when there is no SBQ entailed, as in the sentence like (48).

- (48) 他应该喜欢你。
 Ta yinggai xihuan ni.
 He may^E like you
 ‘He may like you.’

On the other hand, the reason why *keneng* is much more compatible with *wh*-adverbials becomes clear: (i) if one follows S-Y. Lin’s analysis by assuming *keneng* undergoes feature-movement optionally, and it can be interpreted in-situ as object conjecture as long as its structural requirement is satisfied without violating the revised Generalized Relativized Minimality; (ii) or maintain the idea that it carries interpretable {iModal} hence unbounded to any criterial position. In that vein, *keneng* can be interpreted objectively when base-generated inside the TP layer or be interpreted subjectively when externally merges to Force (cf. (33)).

Still, the neatness of the analysis presented above might be undermined by the validity of (41) in which an SBQ scopes over *yinggai* but no EPCP effect is activated. In other words, although it is very likely that *yinggai* is a subjective modal since it cannot be scoped by a

number of SQBs (e.g., Q_{wh} , Focus, Negation, *dou*-less quantifier, Conditional) according to Tancredi (2007), the exception of (41) can hardly be accounted for under my analysis which requires future investigation. Furthermore, though *wh*-adverbials are generally incompatible with *yinggai*, *wh*-arguments with interrogative reading can be found with *yinggai*. This contrast is not surprising if we follow Tsai (1999) assuming *wh*-arguments are subject to unselective-binding instead of LF movement and Cheng and Rooryck's (2002) idea that unselective binding is not limited by intervention effects. Even if we follow S-Y. Lin (2012) assuming epistemic falls into the category of Quantificational feature, the *wh*-construal still holds. Therefore, epistemic adverbials are also expected to cooccur with *wh*-arguments,

which seems to be the case, as illustrated in (49a-b)³³:

- (49) a. 他大概去了哪儿?
 Ta dagai qu-le nar?
 he probably go-ASP where
 ‘Where might he go?’

³³ It appears that although the operator Q of such unselective binding may not act as an intervener, the indefinite *wh*-words would block the feature-movement in question. Observe the following comparison:

- (i) a. 谁应该离开了?
 Shei yinggai likai le?
 who may^E leave ASP
 Reading a: ??‘Who might have left?’
 Reading b: ‘Someone might have left.’
 b. 他应该喜欢谁?
 Ta yinggai xihuan shei?
 he may^E like who
 ‘Who is the one that he might like?’

As shown above, subject *wh*-arguments may not be as good as object ones when *yinggai* is involved. It is very plausible then to claim that null operator and its overt variable behave differently with respect to intervening effect. The pattern of (i) is also observed in the case of epistemic adverbials, which are claimed to be subjective modals in S-Y. Lin (2012: 4). Consider (ii).

- (ii) a. 谁或许离开了?
 Shei huoxu likai le?
 who perhaps leave ASP
 Reading a: ??‘Who perhaps left?’
 Reading b: ‘Someone perhaps left.’
 b. 他或许喜欢谁?
 Ta huoxu xihuan shei?
 he perhaps like who
 ‘Who is the one that he perhaps likes?’

The acceptability of (iib) again suggests that the null operator Q does not block the feature-movement of *huoxu* whereas the *wh*-argument does.

- b. 他也许买了什么?
 Ta yexu mai-le shenme?
 he perhaps buy-ASP what
 ‘What might he buy?’

Additionally, my analysis may have an empirical advantage with respect to denial-*zenme* construction in (29c-d). As argued in Tsai (2008b), denial-*zenme* takes [SPEC, ForceP] and does not contain a {Q} feature, which may potentially block the feature-movement of *yinggai*. However, (29c-d) is unwarranted even if there is no blocker, probably resulting from the violation to the Epistemic Containment Principle. Also note that although *keneng* is compatible with the denial-*zenme* construction, it must appear after *zenme*, shown in (50b), which indicates that *keneng* is delimited to a position that is not higher than [SPEC, ForceP]:

- (50) a. 我怎么可能被开除。
 Wo zenme keneng bei kaichu ne.
 I how^{denial} may^E PASS fire SFP
 ‘How come I got fired? / It is impossible for me to be fired.’
- b. 我可能怎么被开除。
 *Wo keneng zenme bei kaichu ne.
 I may^E how^{denial} PASS fire SFP
 Intended reading: ‘How come I got fired? / It is impossible for me to be fired.’

In sum, the reason why *yinggai*, instead of *keneng*, cannot occur in a *wh*-adverbial construction is that the featural/categorial movement of *yinggai* (or {Epistemic}) to ForceP is blocked by another SBQ (i.e., Generalized Relativized Minimality). On the other hand, *keneng* with an inherently interpretable {Epistemic} is not subject to such constraints, and it gets interpreted objectively in-situ while subjectively when externally merged to ForceP.

Before ending this subsection, it is necessary to point out that although *yinggai* is in general treated as a subjective modal, it would be misleading to take it to be an adverb. A

detailed discussion concerning this issue will be unfold in 3.2, here let us consider one of the examples in advance.

- (51) a. 也许他去了学校。
Yexu ta qu-le xuexiao.
probably he go-ASP school
'He probably went to school.'
- b. 应该他去了学校。
*Yinggai ta qu-le xuexiao.
may^E he go-ASP school
'It is possible that he went to school.'

The contrast of (51a-b) demonstrates one of the distinct behaviors of *yinggai* and the epistemic modal adverb *yexu*. Unlike *yinggai*, which is not allowed to appear before a subject, the adverb *yexu* does not suffer from such constraint.

3.1.4 EMVs and yes-no questions

In 3.1.3, we have witnessed the asymmetric properties of *yinggai* and *keneng* with regard to *wh*-interrogatives. In this subsection, I will focus on the EMVs' compatibility with yes-no questions and envision to reduce their distinctions to the varied feature-valuation requirements.

Chinese employs a quite clear-cut method to construct a yes-no question: the attachment of a question particle *ma* converts a declarative clause into a yes-no interrogative, as in (52).

- (52) a. 他喜欢猫。
Ta xihuan mao.
he like cat
'He likes cats.'

- b. 他喜欢猫吗?
 Ta xihuan mao ma.
 he like cat Q
 ‘Does he like cats?’

Conventionally, *ma* is analyzed as C since it takes a high position that scopes over the entire truth-condition content (see Lee 1986 and Tang 1989). As suggested in Kuo (2008) and Paul (2014), *ma* should be finely identified as the head of ForceP since it decides the type of a clause.

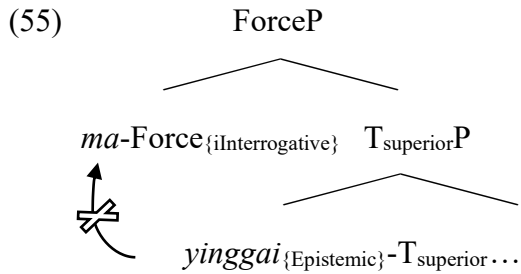
As for the cooccurrence of yes-no question and EMVs, consider the following examples:

- (53) a. 他应该喜欢我吗?
 *Ta yinggai xihuan wo ma?
 he may^E like I Q
 Intended reading: ‘Is it possible that he likes me?’
 b. 应该他喜欢我吗?
 *Yinggai ta xihuan wo ma?
 may^E he like I Q
 Intended reading: ‘Is it possible that he likes me?’
- (54) a. 他可能喜欢我吗?
 Ta keneng xihuan wo ma?
 he may^E like I Q
 ‘Is it possible that he likes me?’
 b. 可能他喜欢我吗?
 ??Keneng ta xihuan wo ma?
 may^E he like I Q
 ‘Is it possible that he likes me?’

The yes-no questions involve *yinggai* in (53) differ greatly from those involve *keneng* in (54). The ungrammaticality of (53a-b) suggests that the propositional content conveyed by *yinggai* cannot be questioned with *ma*. By contrast, in the case of *keneng*, such yes-no questions are generally well-formed except that (54b), in which *keneng* occurs at the pre-subject position, is not as well-accepted as (54a) according to my informants.

First, let us consider the case of *yinggai*. As I have discussed in 3.1.2, that there is no problem for *yinggai* to appear in a *wh*-argument interrogative as nothing blocks the feature movement to Force, whereas *yinggai* cannot cooccur with *wh*-adverbials due to the violation to the Generalized Relativized Minimality triggered by the intervention of *wh*-adverbials. The ungrammaticality of (53b) may be simply resorted to the violation to criterial freezing as discussed in 3.1.1, however, the poor acceptability of (53a) may require additional attention. In short, in contrast to the blocked feature-movement, I argue the cause of the ungrammaticality can be traced to the subjective modal status of *yinggai*, just as what I have discussed in the previous subsection.

Following Paul (2014), I also assume *ma* to be the head of ForceP. What is important is that with the presence of *ma*, the {Force} feature of it must be interpretable. This assumption is not surprising since the declarative status of a clause will be marked as interrogative once *ma* appears, as illustrated in (52). In other words, the feature movement of {Epistemic} would be uncalled-for since it targets a position where no uninterpretable feature is available. If my argument about *yinggai* claiming it is a subjective modal is correct (see 3.2.2), the incompatibility between *ma* and *yinggai* is then predictable: {Epistemic} of *yinggai* must undergo feature-movement to Force to express the subjective conjecture of the speaker via valuing the uninterpretable {uForce}, whereas such movement is not motivated when *ma* is present which signals that Force would then bear {iInterrogative} inherently, this analysis can be illustrated by the following diagram:



By contrast, the robustness of (54a) can be related to the generalization I drew in 3.1.3 that both categorial and featural movement of *keneng* to Force is possible. And if no movement takes place at all, *keneng* will be interpreted objectively according to S-Y. Lin (2012). Therefore, the grammaticality of (54a) is anticipated to be fair, since there is no unmotivated movement. The impaired (54b) on the other hand, not only suffers from the violation to the GHC (see 2.2), but also cannot be properly linearized³⁴.

As I have claimed in the previous subsection, the upmost position available for *keneng* is Force head. This proclaim can be clearly portrayed by the fact that although *keneng* can appear before an Interrogative head (e.g., Reason-*weishenme*), it fails to surpass Denial-*zenme*, which is argued to be the specifier of ForceP in Tsai (2008b). (56a-b) demonstrate that *keneng* must follow Denial-*how*, but can precede Reason-*why*.

- (56) a. 他可能为什么被开除了?
 Ta keneng weishenme bei kaichu le?
 he may^E why^{reason} PASS fire ASP
 ‘What might be the reason that he got fired?’

³⁴ It should still be clarified that (54b) may have nothing to do with unmotivated movement, as *keneng* is specified as {iEpistemic} and can be externally merged to Force to indicate subjective modality.

- b. 他 (*可能) 怎么可能被开除了?
 Ta (*keneng) zenme keneng bei kaichu le?
 he (may^E) how^{denial} may^E PASS fire ASP
 ‘How come he got fired? /He shouldn’t get fired!’

If this articulation of C domain is correct, the imperfection of (54b) can then be attributed to the competition between *ma* and *keneng* for the position of Force head. As GHC requires a head to be occupied by one and only one morphological word. Furthermore, even if one assumes that *keneng* and *ma* (for example, one may consider *keneng* to be externally merged to whatever is formed through the complement-to-SPEC movement of *ma*) does not compete for the Force head position, the correct word order is still unattainable. Recall that I adopt the method of Pan (2021) to derive the correct word order where SFPs are involved. To reminisce the mechanism, the complement of an SFPs would move to the specifier of the latter to create an asymmetrical c-commanding structure which sets the stage for linearization following Kayne’s (1994) LCA. Therefore, the linear order shown in (54b) would require *keneng* to merge to a position higher than the entire projection of *ma* which amounts to saying *keneng* can be found somewhere beyond ForceP. In Paul’s (2014) version of split-CP configuration, there is an AttitudeP postulated above ForceP, which I assume can be projected from the head *nandao* which is argued to select a yes-no question, i.e., ForceP, as complement in Huang et al. (2009: 240). Crucially, *keneng* cannot appear before *nandao*.

- (57) a. 这难道可能是真的吗?
 Zhe nandao kenengshi zhende ma?
 this actually may^E COP true Q
 ‘Is it really possible that this is the truth (I hold it skeptical)?’
- b. 这可能难道是真的吗?
 *Zhe keneng nandao shi zhende ma?
 this may^E actually COP true Q

The contrast illustrated in (57) further suggests that *keneng* must not be higher than Force, as I have discussed in previous subsections. Hence the ill-formedness of (54b) can also be considered as the failure of linearization.

An interim summary can now be made: (i) the incompatibility of *yinggai* and *ma* mirrors the failure of the mandatory feature-movement of *yinggai* since Force no longer bears uninterpretable feature once *ma* is in presence; (ii) *keneng* does not need to undergo feature movement to Force, and as to the ill-formedness of (54b), it can be analyzed as either the violation to GHC or the invalid linearization.

The arguments listed above can be evidenced by another piece of evidence, consider the yes-no questions in (58) without the overt occurrence of *ma*:

- (58) a. 他可能喜欢我?
 Ta keneng xihuan wo?
 he may^E like me
 ‘Is it possible that he likes me?’
- b. 可能他喜欢我?
 Keneng ta xihuan wo?
 may^E he like me
 ‘He might like me (I didn’t expect this)?’
- c. 他应该喜欢我?
 ?Ta yinggai xihuan wo?
 he may^E like me
 ‘He might like me (I didn’t expect this)?’
- d. 应该他喜欢我?
 *Yinggai ta xihuan wo?
 may^E he like me

First, as illustrated by (58b), the yes-no question with *keneng* preceding the subject while

no question particle appears becomes more acceptable than its counterpart in (54b) where there is a *ma*. Second, a sentence like (58c) also enjoys more acceptability than (53b), in which *yinggai* and *ma* cooccur. And I consider my analysis proposed above can account for this phenomenon.

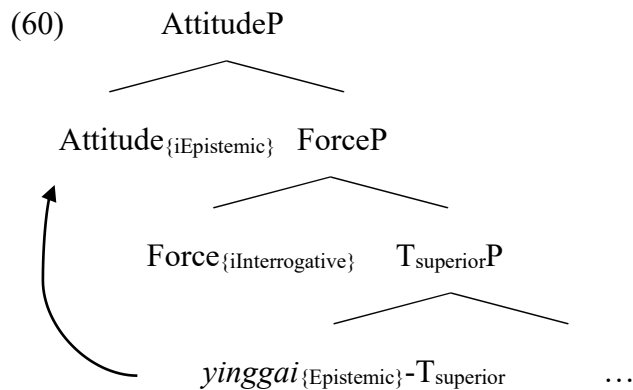
In the case of *keneng*, with the disappearance of *ma*, the violation to the GHC ceases to exist immediately. Since nothing blocks *keneng* from merging to a morphologically vacant Force head. Accordingly, the impossibility of linearization also stops being an obstacle because there is an evident way to construct an asymmetric c-commanding structure if it is viable for *keneng* to take the position of Force.

On the other hand, as I have proposed previously, the main reason why *yinggai* cannot occur with *ma* is that there is no legit motivation for its {Epistemic} feature to move to Force to obtain the subjective modal reading. Then how can we justify the partial acceptability demonstrated by (58c)? I propose such *ma*-less yes-no questions involve the higher AttitudeP since the yes-no questions given in (58) are transformed from declarative assertions by intonational contours, which assign them the speaker's attitude of astonishment/incredulity (cf. Paul 2014: 13). In this situation, one may assume despite that the {uForce} is rendered {iInterrogative} by the intonational pitch shift, the subjective modal reading can alternatively be achieved if {Epistemic} of *yinggai* moves to Attitude to value {uAttitude}. This assumption seems to go along with Pan's (2021) analysis for the attitude-expressing SFP *ne* (glossed as NE_{Att}). According to him, such a head of Attitude is often used to express speakers' subjective opinion and attitude. Consider (59):

- (59) 他喜欢我呢!
 Ta xihuan wo ne!
 he like I NE_{Att}
 ‘He likes me (I didn’t expect that)!’

(59), on par with (58b-c), expresses astonishment and exclamation, if Pan's definition for Attitude was on the right track, it is plausible to assume *yinggai* is able to undergo feature-

movement of Attitude to value the {uAttitude} as {iEpistemic}:



With the diagram depicted in (60), we may now be able to answer why (58c) associated with *yinggai* is not as good as its *keneng* counterpart in (58a): namely, the movement of {Epistemic} in (60) is intervened by a potential position Force, to which {Epistemic} is assumed to be moved to attain the subjective modal reading. On the contrary, there is no such restraint imposed on *keneng* since it not only can be interpreted objectively inside the T_{superior}P, but also can opt to merge to Force externally without violating the Generalized Relativized Minimality. This distinction between *keneng* and *yinggai* seems to accord with the proposal made by Hosono (2018) that unlike external merge, internal merge is not free.

In conclusion, *keneng* and *yinggai* behave quite differently with respect to yes-no questions. On one hand, *yinggai* is completely incompatible with the yes-no question particle *ma*; on the other hand, although *keneng* can occur in a yes-no question, it must stay at the post-subject position. As I have argued above, the analysis made for EMVs in previous subsections can be expanded to their issues with yes-no question as well. That the presence of *ma* blocks the feature-movement of *yinggai* which is required to move to Force to be interpreted subjectively. Meanwhile, given that *keneng* is argued to merge to Force when it takes pre-subject position, the cooccurrence of pre-subject *keneng* and *ma* would violate the GHC constraint. This proposal can be defended by the fact that the ungrammaticality mentioned above basically disappears in a *ma*-less yes-no question.

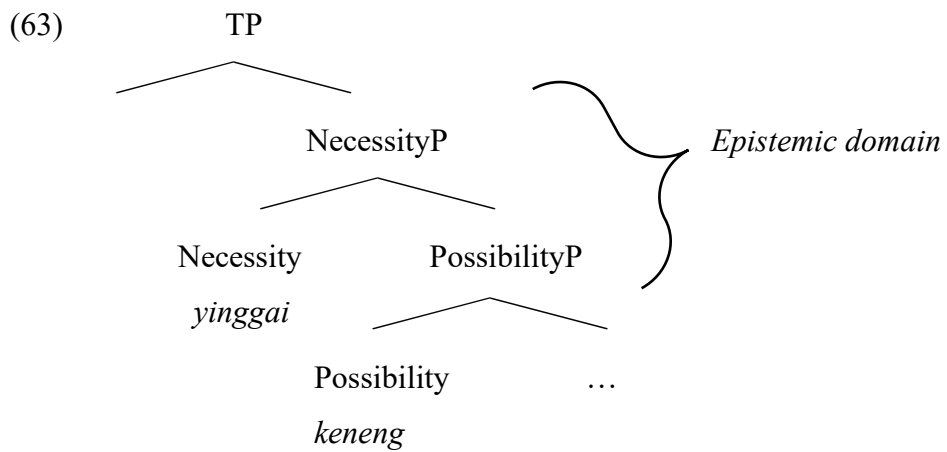
3.1.5 The multiple occurrences of EMVs

As briefly mentioned in 2.2, Chinese allows multiple occurrences of modal verbs. In this subsection, I will turn to the scenario in which there are two EMVs present in one clause. In general, there seems to be a rather rigid order, consider (61-62):

- (61) a. 他应该可能走了。
Ta yinggai keneng zou-le.
he may^E may^E leave-ASP
'It is possible that he has left.'
- b. 他可能应该走了。
??Ta keneng yinggai zou-le.
he may^E may^E leave-ASP
'It is possible that he has left.'
- (62) a. 可能他应该已经走了。
keneng ta yinggai yijing zou-le
may^E he may^E alreadyleave-ASP
'It is possible that he has already left.'
- b. 应该他可能已经走了。
*Yinggai ta keneng yijing zou-le
may^E he may^E alreadyleave-ASP
'It is possible that he has already left.'

Native speakers would consider the multiple occurrences of EMVs somewhat redundant, and they don't seem to be inclined to use two EMVs in one clause normally. Yet, observed by Hsu (2008) and T.H. Lin (2012), there is a preferable sequential order for such multiple occurrences, as illustrated in (61a) in which *yinggai* takes a higher position than *keneng*. By contrast, if *keneng* appears before *yinggai* the grammaticality would be undermined, as in

(61b). Based on the contrast shown in (61), Hsu (2008: 59) proposes a two-leveled epistemic system according to which *yinggai* and *keneng* can be seen as heads projecting into NecessityP and PossibilityP:



In a very similar way, T-H. Lin (2012: 158) proposes a hierarchy modal system,

Necessity is again assumed to take the highest position³⁵:

(64) Necessity>Possibility>Deontic...

T-H. Lin's proposal seems to follow Drubig (2001) which argues that EMVs are actually evidentials that indicate the speaker's certainty towards the proposition and show the trait of 'extra-propositional' thus cannot be scoped by an operator (recall the EPCP discussed in 3.1.3). In addition to this claim, von Stechow and Gillies (2006: 11) argue that Possibility EMV may be exempted from such constraint. The contrast of Necessity *must* and Possibility *might* (may, can, etc.) with regard to operators can then be sorted out:

(65) *Necessity must*

- a. He must not love you. (*Negation>Necessity)
- b. Must he love you? (*Q>Necessity)

³⁵ The original hierarchy presented by T-H. Lin denotes an interchangeability of Deontic and Possibility. The example he uses to justify this proposal is as follows:

- (i) 他要可能来 (才行, 否则这将没有意义)。
Ta yao kenenglai (cai xing, fouze zhe jiang meiyouyiyi.)
he will^D may^E come then fine or this will^D meaningless
'It has to be the case that he may come, (otherwise this would be meaningless).'

The reason why I do not assume a Deontic>Possibility hierarchy in the present work is that (i) is evaluated as 'hardly acceptable' by all of my informants. This consensus can be extended to other Deontic modals as well:

- (ii) 他应该可能来。
*Ta yinggai kenenglai.
he should^D may^E come
'It should be the case that he may come.'
- (ii) 他必须可能来。
*Ta bixu kenenglai.
he obligatorily may^E come
'It should be the case that he may come.'

- (66) *Possibility can and might*
- a. He can't be the shooter. (Negation>Possibility)
 - b. What might he have bought? (Q>Possibility)

T-H. Lin (2012: 172-173) thus suggests that *yinggai* and *keneng* fall inside the pattern shown in (65-66). Consider the following examples, in which *yinggai* and *keneng* get negated/interrogated in (67-68) respectively. As predicted, clauses in (67) are ungrammatical:

- (67) a. 他(*不)应该去了北京。
 Ta (*bu) yinggai qu-le Beijing.
 he not may^E go-ASP Beijing
 'He might have been to Beijing.'
- b. 他应该去了北京吗?
 *Ta yinggai qu-le Beijingma?
 he may^E go-ASP BeijingQ
 'Is it possible that he might have been to Beijing?'
- (68) a. 他不可能去了北京。
 Ta bu keneng qu-le Beijing.
 he not may^E go-ASP Beijing
 'It is impossible that he might have been to Beijing.'
- b. 他应该去了北京吗?
 Ta keneng qu-le Beijingma?
 he may^E go-ASP BeijingQ
 'Is it possible that he might have been to Beijing?'

As shown in 3.1.3 and 3.1.4, in opposition to *keneng*, *yinggai* can neither be negated nor questioned just like T-H. Lin predicts. Differing from my subjective/objective reading analysis for EMVs, T-H. Lin proposes the difference between *keneng* and *yinggai* lies in their

distinct *evidential force*. According to him, *yinggai* has stronger evidential force (i.e., more extra-propositional) than *keneng*, which not only separates them in the form of Necessity versus Possibility, but also gives rise to the Necessity>Possibility order.

T-H. Lin's (2012) analysis does seem to correctly capture the order between *keneng* and *yinggai* shown in (61), and treating the behavioral difference demonstrated by them with regards to operators as the reflection of evidential force agree with my analysis proposed in previous subsections. However, there may raise three questions: (i) does *yinggai* necessarily has stronger evidential force than *keneng*? (ii) can T-H. Lin's argument account for the exceptional cooccurrence of *yinggai* and *wh*-argument as well as the *dou*-scoped *yinggai*? (iii) how does the hierarchy of modals formulated in (64) account for the sequential order shown in (62)? Let us investigate them one by one.

First, the proposal that *yinggai* has stronger evidential force than *keneng* would encounter challenges if we compare them with the pair of *must* and *might* in English. The different evidential force between them can be easily captured via embedding them under a matrix verb like *swear*:

- (69) a. I swear to God he must be there!
 b. #I swear to God he might be there!

With the matrix verb *swear* implying a rather strong evidentiality, the possibility-indicating *might* sounds infelicitous in the embedded clause. On the other hand, *swear* and necessity-indicating *must* present a much better combination as shown in (69a). Interestingly, such contrast is not observed in the case of EMVs in Chinese. As illustrated below:

- (70) a. 我发誓他可能在那儿!
 #Wo fashi ta kenengzai nar!
 I swear he may^E at there
 'I swear he might be there!'
 b. 我发誓他应该在那儿!

#?Wo fashi ta yinggai zai nar!
 I swear he may^E at there
 ‘I swear he might be there!’

The verb *fashi* ‘swear, take an oath’ does not seem compatible with either *yinggai* or *keneng*. To make things more intriguing, the so-claimed Necessity modal *yinggai* appears to be less acceptable as *keneng* in the embedded clause of *fashi*, as in (70b). This indicates that both EMVs in Chinese may have very close evidential force, and if my proposal made in the previous subsection, which assumes that *keneng* and *yinggai* mainly differ from each other in terms of subjectivity and objectivity, is defensible, (70a) being better than (70b) can be attributed to the fact that *keneng* can be interpreted objectively while *yinggai* must have a subjective reading. The subjectivity/objectivity can be further solidified through the following examples:

- (71) a. (大量证据显示)他可能偷了钱。
 Daliang zhengju xianshi ta keneng tou-le
 qian.
 massive proof indicate he may^E steal-ASP
 money
 ‘(Plenty of evidence suggests that) he might have stolen money.’
- b. (大量证据显示)他应该偷了钱。
 #Daliang zhengju xianshi ta yinggaitou-le
 qian.
 massive proof indicate he may^E steal-ASP
 money
 ‘(Plenty of evidence suggests that) he might have stolen money.’
- (72) a. (经科学调查)人类可能起源非洲。
 (Jing kexue diaocha) renlei keneng qiyuan Feizhou
 through scienceinvestigation mankind may^E origin Africa

‘(Scientific investigations suggest that) the mankind may originate in Africa.

b. (经科学调查)人类应该起源非洲。

#(Jing kexue diaocha) renlei yinggai qiyuan
Feizhou
through scienceinvestigation mankind may^E origin
Africa

‘(Scientific investigations suggest that) the mankind may originate in Africa.’

(73) a. (要我说)他应该付了钱的。

(Yao wo shuo) Ta yinggai fu-le qian de.
let me speak he may^E pay-ASP money DE

‘(In my defense) He must have paid the bill.’

b. (要我说)他可能付了钱的。

#(Yao wo shuo) Ta keneng fu-le qian de.
let me speak he may^E pay-ASP money DE

‘(In my defense) He may have paid the bill.’

(74) a. (十有八九)他应该没给钱。

(Shiyoubajiu) ta yinggai mei gei qian.
nine-out-of-ten he may^E have-not give money

‘(The chances are that) he probably didn’t pay his bill.’

b. (十有八九)他可能没给钱。

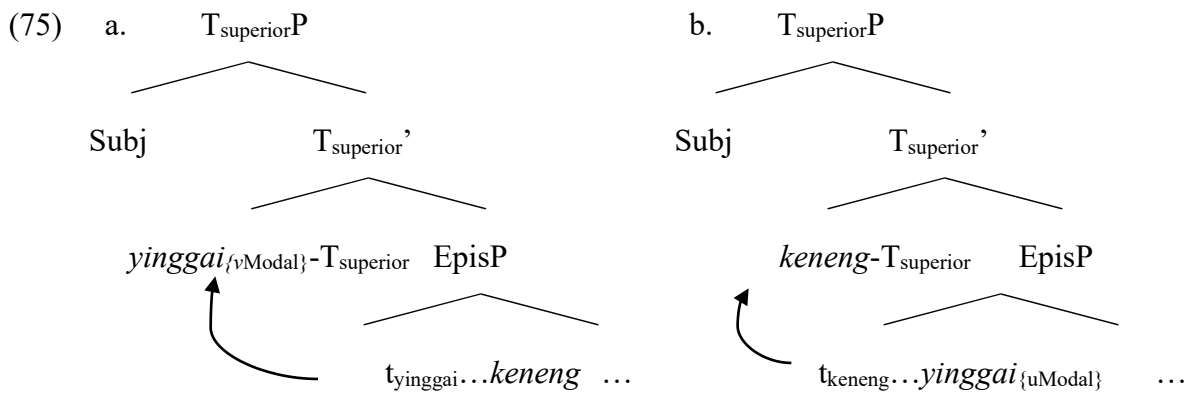
#(Shiyoubajiu) ta keneng mei gei qian.
nine-out-of-ten he may^E have-not give money

‘(The chances are that) he probably didn’t pay his bill.’

As suggested in (71-74), the felicity of EMV expressions varies in terms of implied contexts. In general, in the objectivity-related contexts like ‘*plenty of evidence suggests*’ and ‘*scientific investigations suggest*’, *keneng* is preferred over *yinggai* as shown in (71-72). By

contrast, *yinggai* seems more desirable in the case of ‘in my defense’ and ‘the chances are that’ in which a subjective conjecture is expressed, illustrated in (73-74).

On the basis of the observation above, I do not assume *yinggai* to be the Necessity modal and the difference between it and *keneng* can be reduced to their subjective/objective nature, as I have argued in 3.1.3 and 3.1.4. That the reason why *yinggai* cannot be scoped over by an SBQ is that its feature-movement to Force, which is responsible for the subjective conjecture reading, will be blocked by the intervening SBQ. As to the rigid sequential order of multiple EMVs, I argue it can be derived from the fact that polysemantic *yinggai* is required to raise to T_{superior} to value its {uModal}. In the case of *yinggai-keneng* in (61a), nothing meddles such Agree-relation, as shown in (75a). However, the sequence of *keneng-yinggai* in (61b) would involve a configuration in which *keneng* raises to T_{superior}. As a result, there would be no room for *yinggai* to Agree with the T head, as in (75b) that not only the successive raising of *yinggai* will violate the GHC, but also such Agree relation will be illicit since the raising of *keneng* is able to value the EPP feature of the T head which renders the latter an inert Goal for probing even if one assumes the subject gets topicalized and *yinggai* raises to [SPEC, T_{superior}P]:



Now, let us turn to the second question raised about T-H. Lin’s argument: can assuming *yinggai* to be the highest Necessity modal with strong evidential force account for the exceptional scope-related expressions with respect to *wh*-argument and *dou*-quantification? Specifically, *yinggai* can be scoped by *dou* and embedded in a *wh*-argument question, as in

(76-77):

(76) 大家都应该走了。
Dajia dou yinggai zou-le.
all all may^E leave-ASP
'Everybody may have left.'

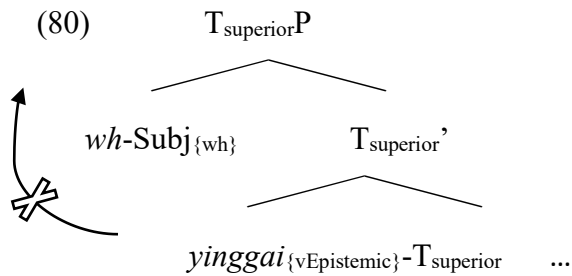
(77) 他应该喜欢谁?
Ta yinggai xihuan shei?
he may^E like who
'Who's the one he may like?'

Tentatively, I find it lacks explanatory power of such exceptions. I admit the relation between *yinggai* and *dou*-quantification requires future investigation, but my analysis offers a possibility to deal with the cases of *wh*-arguments: as I have proposed in 3.1.3, *wh*-arguments in Chinese involve unselective binding which is not subject to the effect of intervention, hence the feature-bearing *yinggai* will not block the *wh*-construal of the object. Furthermore, my proposal seems to resolve the puzzle concerning the asymmetry between subject/object *wh*-arguments when subjective modals are entailed:

- (78) a. 谁应该离开了?
Shei yinggai likai le?
who may^E leave ASP
Reading a: ??'Who might have left?'
Reading b: 'Someone might have left.'
- b. 他应该喜欢谁?
Ta yinggai xihuan shei?
he may^E like who
Reading a: 'Who is the one that he might like?'

- Reading b: ‘He might like someone.’
- (79) a. 谁或许离开了?
 Shei huoxu likai le?
 who perhaps leave ASP
 Reading a: ??‘Who perhaps left?’
 Reading b: ‘Someone perhaps left.’
- b. 他或许喜欢谁?
 Ta huoxu xihuan shei?
 he perhaps like who
 Reading a: ‘Who is the one that he perhaps likes?’
 Reading b: ‘He perhaps likes someone.’

As indicated in (78-79), subjective modals, including *yinggai* and epistemic adverbials, do not interfere unselective binding that licenses the object *wh*-argument in-situ, as in (78b) and (79b). Yet, if the subject preceding subjective modals is a *wh*-argument, instead of *wh*-construal, the indefinite reading is always more desirable. The straightforward analysis would be that it is the subject *wh*-word blocking the feature-movement of *yinggai*, as schematized in (80):



This blocking effect is predicted if we adopt S-Y. Lin’s modified feature classification, according to which {wh} and {Epistemic} are both classified as Quantificational feature, thus the movement in (80) will violate the Generalized Relativized Minimality regulated in Rizzi (2004).

One may wonder why the null operator *Q* does not cancel off the subjective modal reading when the *wh*-argument is object, instantiated by (78b) and (79b). Note that the operator assumed to unselective bind *wh*-variables is specified as $Op_{\{Q\}}$ in Tsai (1999: 40) instead of $Op_{\{wh\}}$. This implies that the $\{wh\}$ feature is originally borne by those indefinite *wh*-words which acquire nothing but interrogative reading from the unselective binding. The $\{Question\}$ feature, however, is not considered to be a Quantificational feature in either the original version or the modified version of feature types referred to above. Hence, that *yinggai* is compatible with object *wh*-argument is predictable. Still, there is a tricky issue needs to be handled. Compare the examples in (81) with those in (78).

- (81) a. 谁应该离开了呢?
 ??Shei yinggai likai le ne?
 who may^E leave ASP Q
- b. 他应该喜欢谁呢?
 Ta yinggai xihuan shei ne?
 he may^E like who Q
 ‘Who is the one that he might like?’

The only difference between (81) and (78) is that the sentences in the former are ended with the SFP *ne*, and with the presence of it a *wh*-word can only be interpreted as *wh*-construal (see Li 2006 and Pan 2021 for detailed discussions of *ne*). The ungrammaticality of (81a) then follows since the subject *wh*-argument can no longer have indefinite reading and the intervention effect is inevitable. On the other hand, *shei* in (81b) with *ne* can only have *wh*-construal. At first glance, given the *wh*-construal reading hinges on the presence of *ne*, one may assume *ne*, on par with *ma* (cf. 3.1.4), is the head of ForceP featured with $\{iInterrogative\}$ which selects *wh*-declaratives. The dilemma is, I have argued that *yinggai* cannot cooccur with *ma* due to the poorly motivated feature-movement in the previous subsection, then how do we justify the case like (81b)? Note that Paul (2014: 12) who also treats *ne* in this case as a Force head in analogy with *ma*. However, he does not assume *ne* to be an SFP that has

inherent interrogative force for following reasons: (i) although the presence of *ne* eliminates the possibility of indefinite readings of *wh*-words, it is omissible (compare (78b) and (81b) again); (ii) unlike *ma*, *ne* has non-interrogative usages. Consider the other functions of *ne*:

- (82) a. 外边下雪呢。
 Waibian xiaxue ne.
 outside snow SFP
 ‘It is snowing outside.’
- b. 你说呢!
 Ni shuo ne!
 you say SFP
 ‘You tell me!’

In (82), neither *nes* in question are related to interrogative reading. Specifically, *ne* in (82a) indicates the progressive aspect while *ne* in (82b) expresses light condemnation. It seems that *ne* may not always determine the illocutionary force, since it is compatible with several kinds of clause type. Therefore, I conclude that *ne* should be analyzed as either a head of AttitudeP (cf. 3.1.4) or a Force head with {uForce} feature. Either way, the feature-movement to Force will be plausible. In short, the difference between *ma* and *ne* with respect to the valuation of {uForce} is the decisive factor licensing their cooccurrences with *yinggai*.

Now let us consider the third question: can T-H. Lin’s (2012) proposed modal hierarchy account for the word order puzzles of (62) (repeated as (83))?

- (83) a. 可能他应该已经走了。
 kenengta yinggai yijing zou-le
 may^E he may^E alreadyleave-ASP
 ‘It is possible that he has already left.’
- b. 应该他可能已经走了。

*Yinggai ta keneng yijing zou-le
 may^E he may^E alreadyleave-ASP
 ‘It is possible that he has already left.’

As illustrated in (83), the assumed Necessity>Possibility order may face some difficulties. In (83a), a reversed order Possibility>Necessity does not seem to cause a problem as long as *keneng* precedes the subject. By contrast, the Necessity>Possibility order in (83b) does not prevent the clause from being ill-formed.

My proposals for *yinggai* and *keneng* arguably provide a more conclusive reasoning. The defected word order presented in (83b) exemplifies the movement from a criterial position, that the polysemantic *yinggai* is proposed to raise to T_{superior} to value its {uModal}. Any further movement will be ruled out. As to the correct word order in (83a), recall that I have argued a pre-subject *keneng* can be considered to be externally merged to Force giving rise to the subjective modal reading or internally merged from its base position indicating objective modal reading, because it only has one meaning and does not have to determine the intended reading of it through Agree. This analysis is consistent with the proposal of S-Y. Lin (2012) which claims *keneng* can have both subjective or objective modal reading.

One more piece of evidence supporting the idea that *keneng* in (83a) is located in C domain is that *keneng* cannot be negated when appears at pre-subject position:

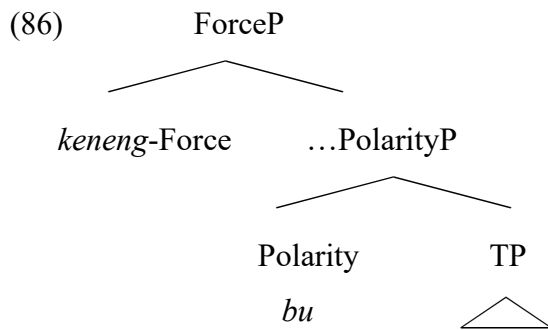
- (84) a. 他不可能已经走了。
 Ta bu kenengyijing zou-le.
 he not may^E alreadyleave-ASP
 ‘It is impossible that he has left.’
- b. 不可能他已经走了。
 *Bu keneng ta yijing zou-le.
 not possible he alreadyleave-ASP

Shown in (84), the post-subject *keneng* in (84a) can be negated whereas the pre-subject

one cannot. The negator *bu* is very likely a Polarity negation marker, as it can be tested by tag question (see Klima 1964):

- (85) 他可能是个好人，不是吗？
 Ta kenengshi ge haoren, bu shi ma?
 he may^E COP CL good-person not COP Q
 ‘He might be a good person, mightn’t he?’

According to Cormack and Smith (2002), Poletto and Zanuttini (2013), polarity negator projects into Polarity Phrase in C domain, which is located above TP, as depicted in the diagram (86):



In (86), there is no way for *bu* to scope over *keneng*, and the ungrammaticality of (84b) thus follows.

To sum up, in this subsection I have briefly examined T-H. Lin’s (2012) argument for the multiple occurrences of EMVs. On one hand, I agree with him there is a sequential order when *yinggai* and *keneng* appear simultaneously, in that *yinggai* tends to precede *keneng*. On the other hand, a simple *yinggai*>*keneng* hierarchy may come short of the contexts in which not only *keneng* appear before *yinggai* without any problem, but also *yinggai* is not allowed to occur before *keneng*. In other words, this sequential order may not be quite rigid. In addition, the assumption that *yinggai* has stronger evidential force seems to be dubious as well. As a result, I do not assume *yinggai* to be a Necessity modal, instead I conclude that the

superficial *evidential force* difference between *yinggai* and *keneng* rests on how are they supposed to be interpreted: subjectively or objectively.

3.2 EMVs are *not* adverbs

As to the categorial status of Chinese epistemic modal verbs, one might tentatively categorize them as adverbs. For example, one has told me that *keneng* and *yinggai* are not different from adverbs like *huoxu* ‘perhaps’ or *dagai* ‘maybe’, since they basically have the same meaning and distributions. Some researchers have even glossed *keneng* as *probably* in their works (See Tang 2001, for instance). In this section, I will follow the studies of T-H. Lin (2012) and Tsai (2015) which claim modal verbs are *verbs*, rather than adverbs, indeed by providing additional evidences.

As shown in (87), at every linear position that epistemic modals may be observed, a modal adverb like *huoxu* can also appear. Therefore, it is no wonder that some may think of EMVs as epistemic adverbs:

- (87) a. 我或许喜欢他。
Wo huoxu xihuan ta.
I perhaps like him
‘Perhaps I like him.’
- b. 或许我喜欢他。
Huoxu wo xihuan ta.
perhaps I like him
‘Perhaps I like him.’

Hsieh (2005) argues that the “source” feature can act as a benchmark that distinguishes subject-orientated from non-subject-orientated modality expressions, which implicitly

suggests that modal adverbs and modal verbs are semantically grouped.³⁶ In this section, I will show that despite modal verbs and modal adverbs sharing some semantic contents, they are formally quite different.

First, let us consider the syntactic difference between modal adverbs and EMVs. It is generally accepted that adverbs differ from complements in that the former can iterate, and no redundancy is observed as long as the total number of adverbs does not exceed three (see Carnie 2013); the multiple occurrence of modal adverbs in Chinese seems to be aligned with this regularity, and there does not seem to be a rigid sequential order for them:

- (88) a. 他大概也许喜欢猫。
 He dagai yexu xihuan mao.
 he probably perhaps like cat
 ‘He probably likes cats.’
- b. 他也许大概喜欢猫。
 He yexu dagai xihuan mao.
 he perhaps probably like cat
 ‘He probably likes cats.’

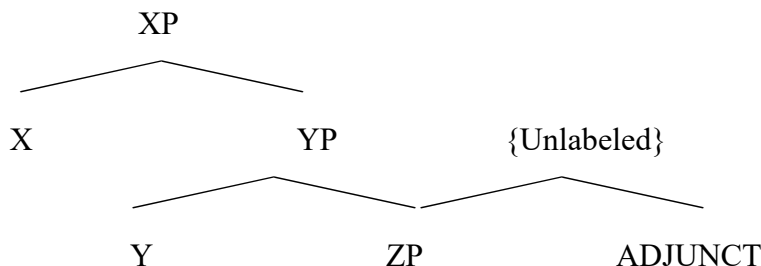
As shown in (88), the word order between these two adverbs is quite free. By contrast, as argued in T-H. Lin (2012) EMVs are in general not allowed to switch positions (cf. 3.1.5) when they both appear after the subject.

While the iteration of adverbs can be accounted for through multiple approaches, here I would like to adopt the Unlabeled Merger analysis by Hornstein and Nunes (2008) and Oseki (2015). In Oseki’s work in particular, a two-peaked structure is proposed to represent the derivational and behavioral natures of adjuncts that Chomsky’s (2004) “separate plane” pair-

³⁶ CKIP (1993), Zhang (1994), and Tang and Tang (1997) argue for the existence of modal adverbs as a subset of modality expressions in view of semantic properties. For instance, *dagai* is classified as a modal adverb.

Merge approach might miss.

(89) *Two-peaked structure for adjunction*



The structure formalized in (89) is said to be able to explain the Adjunct Condition and Condition C Anti-Reconstruction, which are rooted in the asymmetric nature of adjunctions, while circumventing the conceptual and empirical problems of the pair-Merge approach. Notice that in (89), the adjunct will be transferred as soon as it is merged with ZP (for the purpose of continuing the derivation), since unlabeled SO is not accessible to merge according to Hornstein's (2009) *Label Accessibility Condition*. Hence, the further merger with Y can only target ZP of the unlabeled SO. As to the transferred adjunct, the extraction of its constituents will be barred by the No Tampering Condition.³⁷

Following this line of analysis, the multiple occurrence of adverbs may then be elucidated. As adverbs would be transferred at the moment they are adjoined to a certain existing SO, the subsequent derivation is immune to the adjunctions of adverbs no matter how many times adjunctions occur.

T-H. Lin (2012), following the early studies of Lin and Tang (1995), argues that modal adverbs cannot appear as an embedded clause (or a short answer) that serves as an answer to

³⁷ The two-peaked structure approach, however, does not clarify why it is the adjunct and not its sister ZP that gets transferred. In Epstein, Kitahara, and Seely (2012), the adjunct is transferred to ensure that next merge would only have one target. Nonetheless, it seems unproblematic to assume that the adjunct takes part in further derivation after ZP gets transferred. In the same vein, Oseki's approach hinges on the stipulation that it is ZP that is targeted by the further merge, and, again, there does not seem to have any reason not to choose the adjunct as the input of merge.

a question, while EMVs can. To examine this claim, let us observe the following Question and Answer arrays:

- (90) a. Q: 他可能是日本人吗?
Ta keneng shi Ribenren ma?
he may^E COP Japanese Q
'Is there any chance that he might be Japanese?'
- A: 我觉得可能。
Wo juede keneng.
I think may^E
'I think he might be.'
- b. Q: 他可能是日本人吗?
Ta keneng shi Ribenren ma?
he may COP Japanese Q
'Is there any chance that he might be Japanese?'
- A: 可能。
Keneng.
may^E
'I think he might be.'
- c. Q: 他或许不爱吃辣?
Ta huoxu bu ai chi la?
he perhaps not love eat spicy
'Maybe he doesn't like spicy food?'
- A: 我觉得或许。
*Wo juede huoxu.
I think perhaps
'Maybe he doesn't.'
- d. Q: 他或许不爱吃辣?

Ta huoxu bu ai chi la?
he perhaps not love eat spicy
'Maybe he doesn't like spicy food?'

A: 或许。
*Huoxu.
perhaps
'Maybe he doesn't.'

- e. Q: Will you leave for Georgia?
A: Probably.

(90a-b) present the data that EMVs in Chinese seem to have more independences than their English equivalents. Additionally, Chinese differs sharply from English that a stand-alone adverb like *probably* can serve as an independent root clause in English but not in Chinese, as in (90c-d). The impossibility of EMVs functioning as short answers seems to be a linguistic idiosyncrasy of Chinese. Since such short answers are also available in languages other than English.

(91) *Japanese*

Q: 太郎は東京に行ったの?
Taro-wa Tokyo-ni itta-no?
Taro-TOP Tokyo-DAT go-PAST-Q
'Did Taro go to Tokyo?'

A: 多分。
Tabun.
probably
'Probably.'

As suggested by (91), adverbs in Japanese can also be used as a short answer to a question. To make the water even muddier, the unnaturalness of (90d) can be remedied by the

Evaluative SFP *ba*:

- (92) Q: 他不爱吃辣?
Ta bu ai chi la?
he not love eat spicy
'Maybe he doesn't like spicy food?'
- A: 或许吧。
Huoxu ba.
perhaps SFP
'Maybe he doesn't.'

It would be far beyond the main purpose of the present work to regularize the peculiarity of Chinese adverbs, but I would like to provide a possible analysis. The reason why (92) is more acceptable than (91d) is that *ba* offers a host for the adverb. As Cinque (1999) notes that epistemic adverbs in French would move to C domain. Given that *ba* is proposed to be the head of EvaluativeP by Li (2006), its presence may save the grammaticality by providing a specifier position for the adverb.

T-H. Lin (2012: 159) further argues that a negated *keneng* can be scoped by a transition-indicating sentential-*le* counts as an argument for EMVs' verbal status, because only verbs can have their state changed:

- (93) 他不可能去日本了。
[FocusP[^TsuperiorP Ta bu keneng qu Riben] le].
he not may^E go Japan ASP
'It becomes impossible for him to go to Japan.'

Such scopal relation is also anticipated under my previous analysis. Recall sentential-*le* indicating transitional meaning is argued to be Focus head in C domain in Chapter 2, which takes wider scope than EMVs in situ. Additionally, if my analysis for pre-subject *keneng* is

correct (externally merges to Force), it should fall outside the scope of sentential-*le*, which is the case:

- (94) a. 可能他不去日本了。
 [ForceP Keneng [FocusP ta bu qu Riben le]].
 may^E he not go Japan SFP
 ‘It is possible that he won’t go to Japan (who planned to do so).’
- b. 他可能不去日本了。
 [FocusP [TP Ta keneng bu qu Riben] le].
 he may^E not go Japan SFP
 ‘It becomes possible that he won’t go to Japan.’

Besides, T-H. Lin also argues that the fact that *keneng*, instead of epistemic adverbs, can be scoped by focus adverb *zhi* and be questioned/negated proves that *keneng* is not an adverb. This argument seems to be tenable, but it misses out the case of *yinggai* which cannot be negated or questioned as well. Suggested by the clauses in (95b) and (96b), negated/questioned *yinggai* always invokes ungrammaticality.

- (95) a. 他只可能去东京。
 Ta zhi keneng qu Dongjing.
 he only may^E go Tokyo
 ‘It is only possible that he goes to Tokyo.’
- b. 他只应该/大概去东京。
 *Ta zhi yinggai/dagai qu Dongjing.
 he only may^E/probably go Tokyo
- (96) a. 他可能去东京吗?
 Ta keneng qu Dongjing ma?
 he may^E go Tokyo Q

‘Is it possible that he goes to Tokyo?’

b. 他或许/应该去东京吗?

*Ta huoxu/yinggai qu Dongjing ma?
he perhaps/may^E go Tokyo Q

I have addressed the issue with *yinggai* in 3.1.3-3.1.5, that the reason why *yinggai* and epistemic adverbs cannot be scoped by an SBQ is that the latter blocks the feature-movement to Force resulting in the failure of obtaining subjective modal reading. However, it is misleading to assume *yinggai* is one of the epistemic adverbs. I will return to this in the remainder of this section.

Tsai (2015) proposes that the licensing of VP-fronting and VP-ellipsis can be used as a test for modal verbs. For example, a genuine modal verb should be able to license both VP-fronting and VP-ellipsis, since only verbs, but not adverbs, can satisfy the head government requirement (cf. Saito and Murasugi 1990). Consider the case of VP-ellipsis first:

(97) a. 他会开车, 我也会。

Ta hui kaiche, wo ye hui.
he can drive I too can
‘He can drive and so can I.’

b. 他或许去了北京, 我也或许。

*Ta huoxu qu-le Beijing. wo ye huoxu.
he perhaps go-ASP Beijing I too perhaps
‘He perhaps went to Beijing and so did I.’

It is very clear that although a root modal verb can license VP-ellipsis, as in (97a), epistemic adverbs cannot, shown in (97b). Furthermore, it is argued in Wu (2002) that EMVs are also not capable of licensing VP-ellipsis, illustrated in (98).

- (98) 他可能/应该喜欢我，你也可能/应该。
 *Ta keneng/yinggai xihuan wo, ni ye keneng/yinggai.
 he may^E like I you too may^E
 ‘He may like me, and you may too.’

It then seems reasonable to conclude that EMVs behave in a way more similar to epistemic adverbs, contra my arguments in this section. Nevertheless, EMVs are able to license VP-fronting, which is argued to be a modal verb test in Huang (1993), Lobeck (1995) and Tsai (2015). As I have discussed in 3.1.2, the VP complement can appear before the subject, as (99) shows³⁸.

- (99) a. 去北京了他可能。
 Qu Beijingle ta keneng.
 go BeijingASP he may^E
 ‘He might have gone to Beijing.’
 b. 去北京了他应该。

³⁸ Tsai (2015: 12) argues that EMVs are in fact adverbs on basis of the following clause:

- (i) 肯去北京他可能。
 *Ken qu Beijing ta keneng.
 will^{Dy} go Beijing he may^E
 ‘It is possible that he will go to Beijing.’

T-H. Lin (2012) claims that the ungrammaticality of (i) has nothing to do with *keneng*. As shown in (ii), (i) remains unacceptable even if we substitute *keneng* for *hui*, a dynamic modal verb.

- (i) 肯去北京他会。
 *Ken qu Beijing ta hui.
 will^{Dy} go Beijing he will^{Dy}
 ‘He is willing to go to Beijing.’

Thus, T-H. Lin (2012) concludes that the ill-formedness of (i) results from breaking up a modal verb sequence.

?Qu Beijingle ta yinggai.
 go BeijingASP he may^E
 ‘He might have gone to Beijing.’

In addition, EMVs differs from epistemic adverbs materially in that the latter may not be allowed to occur before *ye* ‘too’ and *bu* ‘not’ within the target conjunct. Consider (100-101):

(100) a. 他或许会说日语，她(*也)或许(也)会。

Ta huoxu hui shuo Riyu, ta (*ye) huoxu
 (ye) hui.
 he perhaps can^{Dy} speak Japanese she too perhaps
 too can^{Dy}
 ‘He perhaps can speak Japanese, and so can she.’

b. 他可能会说日语，她(也)可能(也)会。

Ta keneng hui shuo Riyu, ta (ye) keneng
 (ye) hui.
 he may^E can^{Dy} speak Japanese she too may^E
 too can^{Dy}
 ‘He probably can speak Japanese, and so can she.’

c. 他应该会说日语，她(也)应该(也)会。

Ta yinggai hui shuo Riyu, ta (ye) yinggai
 (ye) hui.
 he may^E can^{Dy} speak Japanese she too may^E
 too can^{Dy}
 ‘He probably can speak Japanese, and so can she.’

(101) a. 他或许会说日语，她(*不)或许(不)会。

Ta huoxu hui shuo Riyu, ta (*bu) huoxu

(bu) hui.
 he perhaps can^{Dy} speak Japanese she not perhaps
 not can^{Dy}

‘He perhaps can speak Japanese, but she cannot.’

b. 他可能会说日语，她(不)可能(不)会。

Ta keneng hui shuo Riyu, ta (bu) keneng
 (bu) hui.
 he may^E can^{Dy} speak Japanese she too may^E
 too can^{Dy}

Reading a: ‘He probably can speak Japanese, but it is possible that she cannot.’

Reading b: ‘He probably can speak Japanese, but it is impossible that she can.’

c. 他应该会说日语，她(不)应该(不)会。

Ta yinggai hui shuo Riyu, ta (bu) yinggai
 (bu) hui.
 he may^E can^{Dy} speak Japanese she not may^E
 not can^{Dy}

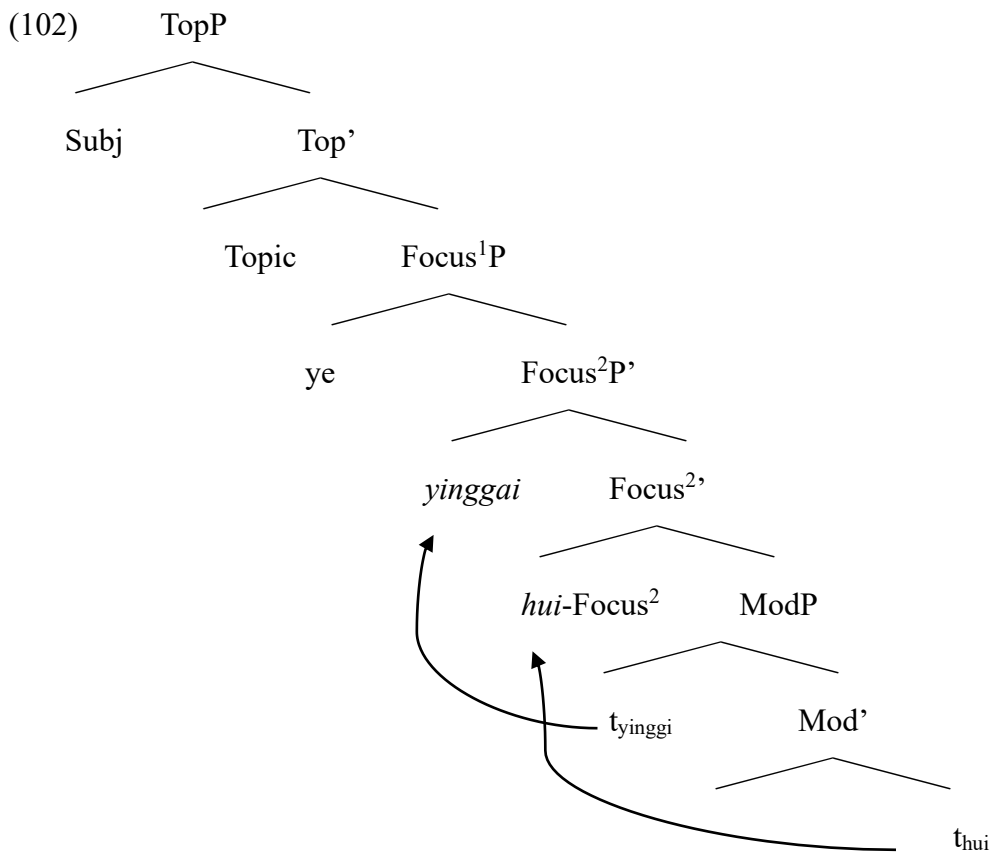
Reading a: ‘He probably can speak Japanese, but it is possible that she cannot.’

Reading b: ‘He probably can speak Japanese, but it is impossible that she can.’

It is quite surprising that *yinggai* can be negated when appearing in the conjunct, as I have discussed in 3.1.3 that *yinggai* in matrix clause cannot be negated. One possible analysis could be that: the matrix *yinggai* takes the liberty to undergo feature-movement to Force to attain the subjective modal reading by valuing {uForce} in the clausal periphery, hence the blocking effect is no longer a problem since the *yinggai* in conjunct no longer needs to do so. In that case, being able to be negated by *bu* strongly suggests that *yinggai* has verbal origins. By contrast, although nothing hinders the feature-movement of *huoxu* in (101a), the ungrammaticality retains. Therefore, *yinggai* and epistemic adverbs are distinct lexical entries.

Such distinction between EMVs and epistemic adverbs also seems to fall outside Su’s

(2008) approach, which also claims that EMVs are adverbs. It is noticeable that she argues that the subject and *ye* ‘too’ in the target conjunct are contrastive Topic and Focus respectively, and in the case of VP-ellipsis licensed by modal verbs, the following structure is proposed:



Su treats *yinggai* and *hui* in (100-101) as the adverbial specifier and head of ModP respectively. According to Su (2008: 80), the Focus element (*ye* in this case) must be in a SPEC-Head configuration with Focus head which must be lexically occupied (cf. Focus Criterion in Brody 1990; É. Kiss 1998). Su thus argues Focus head can be occupied by modal verbs, while if *yinggai* occurs in the numeration it ‘merges onto the specifier of a second FocusP’³⁹. Her analysis indeed captures the contrastive nature of the second conjunct and

³⁹ The assumption that there might be two FocusP could be somehow unappealing, as Shyu (1995) argues that there must be one and only one Focus Phrase in Chinese.

provides us with a plausible reasoning for the fact EMVs cannot license VP-ellipsis. However, three questions will raise if (102) is adopted; (i) how come the SPEC-Head configuration of *yinggai* and *hui* within the second FocusP fails to permit a deleted VP? (ii) and more importantly, how does (102) account for the cases in (100b-c) in which EMVs precede *ye*. (iii) is it possible for FocusPs assumed above to have a lexically vacated head (Focus Criterion violated)? Whence, I do not adopt Su's (2008) theory.

Here, I would like to propose that VP-ellipsis/fronting may not be the efficient benchmarks to tell modal verbs from adverbs, because (i) the elided complement of EMVs is arguably TP instead of VP; (ii) not all root modal verbs license VP-fronting.

First, many linguists have argued that EMVs in Chinese take TP as their complement (cf. S-Y. Lin 2012, T-H. Lin 2012 and Tsai 2015). As mentioned in 3.1.3, S-Y. Lin (2012: 4) proposes that EMV like *keneng* take a maximal projection indicating truth condition as its complement, as Huitink (2008) assumes TP to be that projection. Likewise, in the topological study of Tsai (2015), epistemic modal verbs are sketched as taking a position above inflectional layer (i.e., TP). In this thesis, despite that I propose a Split-T configuration for Chinese, EMVs still take $T_{inferior}P$ as complement unless *keneng* externally merges onto Force. The remaining question would be: say the deletion of EMVs' complement does not involve VP-ellipsis, but why is it ungrammatical? The answer is simple, that Chinese disallows TP-ellipsis. And this argument can be exemplified by the fact that the effect of Sluicing is absent. Sluicing, termed by Ross (1969), refers to a special kind of ellipsis in which only *wh*-words remain in the subordinate clause:

(103) He was heading for a place, but I don't know where ~~he was heading for~~.

The Sluicing of English illustrated above entails TP-deletion at PF level right after the *wh*-movement (see Merchant 2001: 84). In contrast to (103), Sluicing is prohibited in Chinese:

(104) a. 他讨厌某个人，但我不知道谁。
 *Ta taoyan mougeren, dan wo bu zhidao shei.

he hate someone but I not know who

‘He hates someone, but I don’t know who.’

b. 有人会日语, 但我不知道谁。

*Youren hui Riyu dan wo bu zhidao shei.

someone can Japanese but I not know who

‘Someone can speak Japanese, but I don’t know who.’

It is noteworthy that the ungrammaticality presented in (104) can be remedied by the insertion of the copula *shi* ‘to be’. Consider (105) in the following, which differs from (104a) by having *shi* in the subordinate clause, whereas it is perfectly acceptable:

(105) 他讨厌某个人, 但我不知道是谁。

Ta taoyan mougeren, dan wo bu zhidao **shi** shei.

he hate someone but I not know COP who

‘He hates someone, but I don’t know who.’

Tough share certain superficial similarities, the particular type of ellipsis is argued to be related to a different operation. For example, Adams (2004) and Adams and Tomioka (2014) refer to the *wh*-remnant in (105) as an outcome of Pseudo-slucing. According to them, the subsequent clause in (105) entails a null *pro* which is anaphoric to an NP (i.e., *mougeren*) in the preceding clause. Such null *pro* can in fact be spelt-out:

(106) 他讨厌某个人, 但我不知道那是谁。

Ta taoyan mougeren, dan wo bu zhidao **na** shi
shei.

he hate someone but I not know that COP
who

‘He hates someone, but I don’t know who is that.’

Crucially, put aside the Pseudo-sludging, it seems that Sludging is in general not allowed in Chinese. Following the analysis of Merchant (2001, 2004), in which Sludging is assumed to be carried out through deleting the TP, TP-ellipsis is then out of the question in the case of Chinese. Consequently, the ungrammaticality shown in (98) (repeated as (107)) may be attributed to the same reasoning that rules out (104a-b) that the TP in Chinese is not elidable.

- (107) 他可能/应该喜欢我, 你也可能/应该。
 *Ta keneng/yinggai xihuan wo, ni ye keneng/yinggai.
 he may^E like I you too may^E
 ‘He may like me, and you may too.’

On the contrary, given that polysemantic root modal verbs are argued to be internally merge to T_{superior} and T_{inferior} when more than one of them appears in 2.2 (in that case the occurrence of a higher EMV is in general undesirable due to the issue of redundancy), my proposal seems to capture the fact that the so-called VP-ellipsis may display different patterns in the context of multiple root modal verb occurrence:

- (108) a. 他要会开车, 你也要会
 Ta yao hui kaiche, ni ye yao *(hui).
 he will^D can^{Dy} drive you too will^D can^{Dy}
 ‘He is supposed to be able to drive, and so are you.’
- b. 张三会肯来, 李四不会(*肯).
 Zhangsan hui ken lai, Lisi bu hui (*ken).
 Zhangsan will^D will^{Dy} come Lisi not will^D will^{Dy}
 ‘Zhangsan will be willing to come, but Lisi won’t.’

In (108), both sentences involve multiple occurrences of root modal verbs, and both of them are in the Deontic-Dynamic sequence. Interestingly, the remnant clause of (108a) is

required to remain the wholesomeness of such sequence, and it becomes unacceptable once the Dynamic *hui* is deleted. Quite oppositely, the subsequent dynamic modal *ken* must vanish in (108b) to avoid ungrammaticality. The conventional analysis for VP-ellipsis does not seem helpful to deal with this special case. For example, Su's (2008) assumption that there could be two FocusPs at one's disposal may justify the multiple occurrences, however one of the FocusPs may not obtain the Focus Force through a SPEC-Head configuration, since there can only be one Focus element, i.e., the adverb *ye*. The ungrammaticality of (108b) would bring about more difficulty, because the VP-ellipsis operation erases a modal verb. In that case, the eliding operation would defectively delete a Focus head, which is considered to be the licensing head for VP-ellipsis.

By contrast, my analysis on the basis of polysemantic/monosemic asymmetry is able to provide a rather plausible reasoning for the idiosyncrasies shown in (108). In short, the subsequent dynamic modal verb *hui* in (108a) cannot be elided because it can have both deontic and dynamic meaning (cf. 1.3), which means that it must merge to a T head to determine its specific meaning through feature-valuation. Hence, the ellipsis of *hui* would entail TP-ellipsis again, which is argued to be prohibited above. On the other hand, *ken* in (108b) is monosemic by nature. Thus, it need not to raise to T to specify the interpretation. As a result, it can and must be elided when VP-ellipsis takes place as it is proposed to originally generated in the lexical layer underneath *vP* (cf. Tsai 2015: 15).

Furthermore, the Phrase/Head distinction that is assumed to concern the licensing of VP-ellipsis is also not flaw-free. As Lee (2021: 3) suggests, although being heads, aspectual verbs in Chinese also fail to license VP-ellipsis. Consider (109), in which the VP-ellipses of *kaishi* 'start' and *jixu* 'continue' yield unideal results:

- (109) a. 黄河开始泛滥， 长江也开始。
 *Huanghe kaishi fanlan, Changjiang ye kaishi ø.
 Yellow-river start over-flow Yangtze-river too start
 'The Yellow River starts to over flow and so does the Yangtze River.'

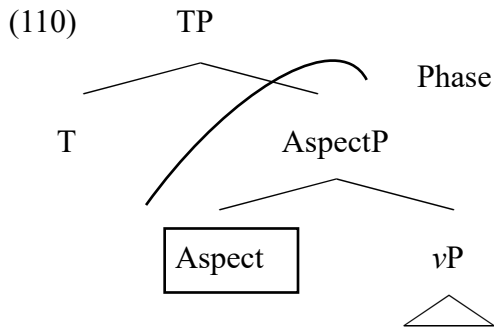
b. 老师继续说话，他也继续。

*Laoshi jixu shuohua ta ye jixu.

Teacher continue talk he too continue

‘The teacher continues talking, and so does he.’

Instead of denying the ‘Headness’ of aspectual verbs, Lee proposes that the prohibition of VP-ellipsis is *independently constrained by locality conditions*. To elaborate this, he makes a proposal with two primary layers: (i) *vP*-ellipsis takes place after the *vP* in question moves to [SPEC, CP] (see Johnson 2001; Fujiwara 2018); (ii) aspectual verb is assumed to be functional head that heads a phase. Observe the following diagram:



According to Lee (2021: 8), the complement of Aspect verb: *vP* fails to escape from Transfer by merging to the edge of this phase because such movement would be ‘too local’. In the sense of Abels (2003), a local Complement-to-SPEC movement is generally barred because no new structural relation is built via such movement for the purpose of feature-valuation. Inversely, *vP* would be able to use the specifier of a control verb as an escape hatch, thus *vP*-ellipsis of control verb is possible in Chinese. If Lee (2021) has made the correct examination, the licensing of VP-ellipsis may not always be valid in the case of distinguishing modal verbs from adverbs, or in a more general term, Heads from Phrases.

In addition to VP-ellipsis, I consider VP-fronting is also not a perfect test telling modal verbs from adverbs. Although the VP-fronting of root modal verbs like dispositional *hui* is

plausible, not all the root modal verbs seem to allow the fronting of its complement.

- (109) a. 去东京李四可能会。
Qu Dongjing Lisi kenenghui.
go Tokyo Lisi may^E will^D
'It is possible that Lisi will go to Tokyo.'
- b. 喝烈酒李四可以。
He liejiu Lisi keyi.
drink spirit Lisi can^D
'Lisi can drink spirit.'
- c. 吃青蛙李四要。
Chi qingwaLisi yao.
eat frog Lisi will^{Dy}
'Lisi will eat some frogs.'
- (110) a. 去东京李四可能应该。
*Qu Dongjing Lisi kenengyinggai.
go Tokyo Lisi may^E should^D
'It is possible that Lisi should go to Tokyo.'
- b. 喝烈酒李四肯。
??He liejiu Lisi ken.
drink spirit Lisi will^{Dy}
'Lisi is willing to drink spirit.'
- c. 吃青蛙李四敢。
*Chi qingwaLisi gan.
eat frog Lisi dare^{Dy}
'Lisi dare eat some frogs.'
- d. 游一千米李四能。
*You yiqianmi Lisi neng.

swim one-thousand-meter Lisi can^D

‘Lisi can swim for a kilometer (certain prerequisites are met).’

As demonstrated above in (109-110), root modals, deontic or dynamic, behave quite discretely with regards to the licensing of VP-fronting. As attested by multiple informants, *hui*, *keyi* and *yao* are evaluated as ‘most acceptable’, whereas other modal verbs licensing VP-fronting are reckoned as farfetched. In this case, the contrast of polysemantic/monosemic does not seem to aid as well. Since neither polysemantic *neng* nor monosemic *gan* permits VP-fronting, as in (110a) and (110c). Therefore, I admit this issue counts as a residual problem for further studies. But it makes my point clear that VP-fronting is not perfect in the aspect of identifying modal verbs⁴⁰.

Before I end this section, I will provide one more piece of evidence in support of the concept that EMVs are not adverbs.

Modal adverbs are banned from the A-not-A structure, whereas modal verbs, epistemic or root, occur in such forms. Among many studies conducted on A-not-A structure (see Huang 1982, Huang et al. 2009 for examples), it is generally agreed that only predicate element (verb and adjective) can appear in such structure. Hence, it is unwarranted to treat epistemic modals as adverbs.

(111) a. 地球可不可能会毁灭?

Diqiu ke-bu-keneng hui huimie?

earth may^E-not-may^E will^D perish

‘Is there any chance that Earth will perish?’

⁴⁰ Unlike root modal verbs, EMVs seem much more compatible with the so-called VP-fronting, as I have argued in 3.1.2. Still, it should be emphasized again that concerning the structures in which EMVs appear at the rightmost slot, it would be misleading to identify them as something analogous to the VP-fronting clauses in (109). Since the former not only require the appearance of sentential-*le*, contra the latter, but also distinct syntactic operation is involved; namely, both the subject and the EMV in question are argued to move to the left periphery (cf. (24)).

- b. 他或不或许爱吃辣?
 *Ta huo-bu-huoxu ai chi la?
 he perhaps-not-perhaps love eat spicy
 ‘Is there any chance that he likes spicy food?’
- c. 地球应不应该毁灭?
 *Diqiu ying-bu-yinggai huimie?
 earth should^D-not-should^D perish
 Intended reading: ‘Is there any chance that Earth will perish?’

The contrast of (111a-b) clearly separates *keneng* from epistemic adverb *huoxu*, since adverbs are barred from being generated in the form of A-not-A. However, one might notice that *yinggai* is not appropriate for A-not-A structure as well unless it is interpreted as a deontic modal verb meaning *should*. Yet, the ill-formedness of (111c) can again be resorted to the fact that *yinggai* cannot be negated (cf. EPCP in 3.1.3), since the negator *bu* will block the feature-movement of *yinggai* to Force, which is irrelevant to the verbal nature of *yinggai*.

In sum, in this section I have shown that EMV like *keneng* and *yinggai* are not subject to the group of epistemic adverbs, and they are different in the following aspects: (i) epistemic adverbs can not only iterate but also display interchangeability without altering the interpretation. EMVs, on the other hand, would face the problem of redundancy when more than one is present; (ii) only EMV can follow a focus adverb like *zhi*; (iii) only EMV can function as a short answer to a question; (iv) only EMV can appear in the A-not-A structure. Besides, I have also clarified that some of the similarities between *yinggai* and epistemic adverbs with respect to the constraints mentioned above can be attributed to the mandatory subjective modal interpretation instead of their categorial status. At last, I also propose the idea of taking VP-ellipsis/fronting as diagnoses of modal verb/adverb is not completely appealing, as they may either rule in or out expressions incorrectly.

3.3 The cooccurrence of EMVs and Epistemic adverbs

In this section, I will focus on the cases where EMVs and Epistemic adverbs (EA) occur within one clause. Particularly, given that I have argued the locus of EMVs under distinct circumstances, I will examine in this section that where does EA adjoin to by using EMVs as referential criteria.

First, let us go through the following data concerning the occurrence of EA:

- (112) a. 他大概去了北京。
 Ta dagai qu-le Beijing.
 he probably go-ASP Beijing
 ‘He probably went to Beijing.’
- b. 大概他去了北京。
 Dagai ta qu-le Beijing.
 probably he go-ASP Beijing
 ‘He probably went to Beijing.’
- (113) a. 他大概可能去了北京。
 Ta dagai keneng qu-le Beijing.
 he probably may^E go-ASP Beijing
 ‘He probably went to Beijing.’
- b. 他大概应该去了北京。
 ?Ta dagai yinggai qu-le Beijing.
 he probably may^E go-ASP Beijing
 ‘He probably went to Beijing.’
- (114) a. 他可能大概去了北京。
 *Ta keneng dagai qu-le Beijing.
 he may^E probably go-ASP Beijing
 ‘He probably went to Beijing.’
- b. 他应该大概去了北京。

- *Ta yinggai dagai qu-le Beijing.
 he may^E probably go-ASP Beijing
 ‘He probably went to Beijing.’
- (115) a. 大概他可能去了北京。
 Dagai ta keneng qu-le Beijing.
 probably he may^E go-ASP Beijing
 ‘He probably went to Beijing.’
- b. 大概他应该去了北京。
 Dagai ta yinggai qu-le Beijing.
 probably he may^E go-ASP Beijing
 ‘He probably went to Beijing.’
- (116) a. 大概可能他去了北京。
 ?Dagai keneng ta qu-le Beijing.
 probably may^E he go-ASP Beijing
 ‘He probably went to Beijing.’
- b. 大概应该他去了北京。
 *Dagai yinggai ta qu-le Beijing.
 probably may^E he go-ASP Beijing
 ‘He probably went to Beijing.’

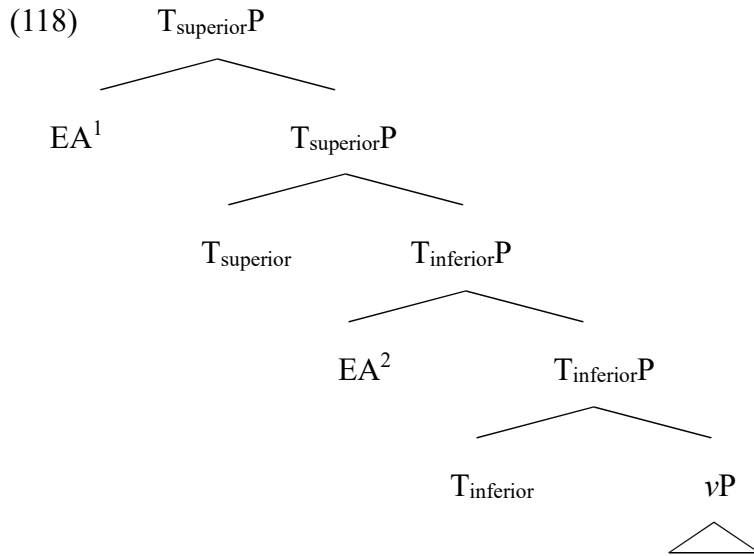
Based on the clauses portrayed in (112-116), following conclusions can be drawn: (i) EA can appear either before or after the subject, as in (112); (ii) EA can precede EMVs, while if the EMV is *yinggai* the grammaticality decreases slightly, as in (113); (iii) EA is in general prohibited from appearing after EMVs, as in (114); (iv) EA can appear at sentential-initial position if and only if EMVs take post-subject position, as in (115-116).

First, as suggested by (112a), EA can occur between the subject and the EMV. Given it is uncontroversial to analyze it as occupying the specifier of EpisP (see S-Y. Lin 2012: 14; Tsai 2015: 12 for examples). In 1.3, EpisP is sketched to be a projection between two T heads,

thus we naturally expect it to occupy a post-subject position. However, one question rises against such consideration that there are no EMVs present in (112) that are assumed to be the head projecting into EpisP. In that case, I believe it is plausible to treat EA as ordinary sentential adverb adjoining to T_{inferior}P. On the other hand, as illustrated in (112b), EA can also appear at the sentential-initial position. It may seem appealing to treat EA in such case as merging to the C domain just like *keneng* which externally merges to Force (cf. 3.1.3), but independent evidence indicates that such approach would be unwarranted. As shown in (117a), the appearance of the sentential-initial EA would eliminate the possibility of subject topicalization, which can be demonstrated via topicalization markers like *ya* (see Li and Thompson 1981, Cpt 4). On the other hand, *keneng* does not meddle with the Topicalization of subject, as shown in (117b):

- (117) a. 大概他呀，不喜欢你。
 *Dagai ta-ya bu xihuan ni.
 probably he-TOP not like you
 ‘Speaking of him, perhaps he doesn’t like you.’
- b. 可能他呀，不喜欢你。
 Keneng ta-ya bu xihuan ni.
 may^E he-TOP not like you
 ‘Speaking of him, it is possible that he doesn’t like you.’

Therefore, a pre-subject EA should be analyzed an adjunct to TP as well, only with this TP being the higher one. The distribution of EA without EMV can be sketched in the following diagram:



With the subject situated at [SPEC, T_{superior}P], the two kinds of word order in (112) can be resorted to which TP does an EA adjoin to. One more empirical merit of (118) is that it allows both EA¹ and EA² to be spelt-out phonologically, as in (119):

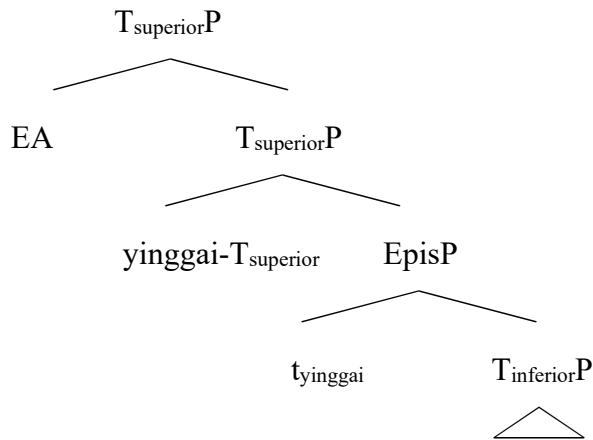
- (119) 大概他或许只是累了。
 Dagai ta huoxu zhi shi lei-le.
 probably he perhaps only COP tired-ASP
 ‘Maybe he is just tired.’⁴¹

Keep the structure of (118) in mind, let us now consider the cases in which EMVs are involved. In (113-114), there is an evident contrast with regards to the relative positions between EAs and EMVs when both of them occur at post-subject positions. In short, EMVs, *yinggai* or *keneng*, are generally prohibited from preceding EAs. This observation is not surprising as I have mentioned above that EAs are often argued to occupy the specifier

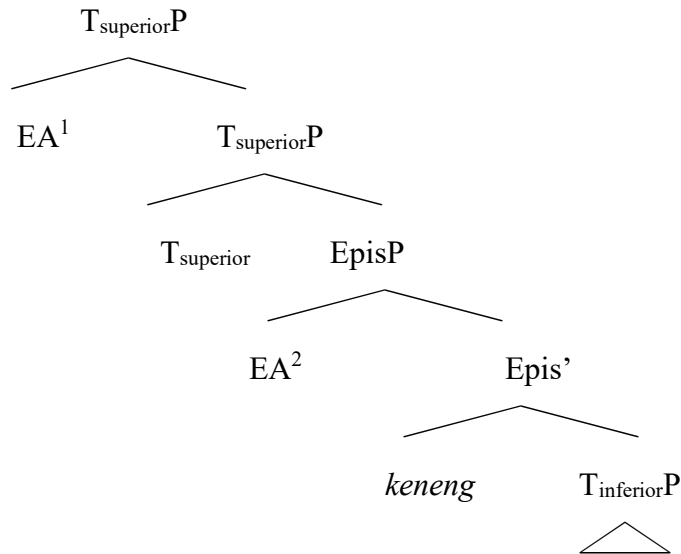
⁴¹ The multiple occurrences of EA in (118) differs from the case of EMV (cf. 3.1.5) significantly in that (i) no redundancy is reported about the clause of (118); (ii) the two EAs in (118) are interchangeable.

position of EMVs. I yet consider the configuration of (118) has partial coverage on the matter of (113-114). I have persisted the concept that *yinggai* differs from *keneng* in terms of the requirement of feature-valuation during Chapter 3, that *yinggai* will be trapped by the freezing effect after it gets {uModal} valued by raising to T_{superior} . However, as the ungrammaticality of (114b) suggests, if EAs are constrained to [SPEC, EpisP] there would appear an incorrect word order. As a result, it is necessary to conclude that EAs must be an TP-adjunct when *yinggai* is present, whereas *keneng* is free from such constraint.

(120) a. *EA-yinggai sequence*



b. *EA-keneng sequence*



The structures sketched in (120) seem to successfully capture the fact that there might have two more EAs in front of *keneng*, but one and only one of *yinggai*.

(121) a. 大概他也许可能喜欢我。

Dagai	ta	yexu	keneng	xihuan	wo.
probably	he	perhaps	may ^E	like	I

‘Perhaps it is possible that he likes me.’

b. 大概他也许应该喜欢我。

??Dagai ta yexu yinggai xihuan wo.
probably he perhaps may^E like I

‘Perhaps it is possible that he likes me.’

Although both clauses in (121) suffer from the issue of redundancy to some extent, (121a) is undoubtedly more acceptable. Given the diagrams of (120a-b), despite that there might still be two vacancies for EA in the case of *keneng*, there is only one for *yinggai*. It should also be addressed here that one of my informants claims that the occurrence of *yinggai* and EA does not sound as good as *keneng* and EA (cf. (113)) in the first place. In my opinion, that unnaturalness may result from the fact that either *yinggai* or EA needs to be interpreted as subjective modal, hence their occurrence may exhibit redundancy by default, and an additional EA only makes thing worse, as in (121b). And accordingly, (121a) remains grammatical even if *keneng* appears at sentential-initial position (Force):

(122) 可能也许他大概喜欢我。

Keneng yexu ta dagai xihuan wo.
may^E perhaps he probably like I

‘Perhaps it is possible that he likes me.’

Finally, let us look into the examples in (115-116). First, the grammaticality of (115) is deductible from the previous discussion in this section. With EMVs stay at post-subject position, EA can and must appear before them. In (116), EA preceding EMVs becomes unacceptable once EMVs occur before the subject. The ineligibility of (116b) can be induced by the violation to the ‘freezing’ condition, since *yinggai* moves to a pre-subject position from a feature-value one. In turn, the lesser ungrammaticality of (116a) is also predictable. Remember I have argued that pre-subject *keneng* externally merges to Force in 3.1.3 and 3.1.4, following the pioneering idea of S-Y. Lin (2012). And if my previous proposal claiming

EAs adjoin to TPs or EpisP is on the right track, the EA in (116a) which potentially merges to [SPEC, ForceP] simply falls outside the possible range of EA-adjunct. This conclusion also accords with the observation made in (117) that EAs may not be allowed to enter into the C domain.

We can now reach a generalized distributive map of the occurrence of EAs, with or without EMVs, according to which there are in total three possible loci for EAs:

- (123) a. When EMVs are absent, EAs can adjoin to $T_{\text{inferior}}P$ or/and $T_{\text{superior}}P$.
 b. When *keneng* appears at the post-subject position, EAs can occupy [SPEC, EpisP] or adjoin to $T_{\text{inferior}}P$ or/and $T_{\text{superior}}P$.
 c. When *keneng* appears at the sentential-initial position, EAs can adjoin to $T_{\text{inferior}}P$ or/and $T_{\text{superior}}P$.
 d. When *yinggai* appears, EAs can adjoin to $T_{\text{superior}}P$.

3.4 Summary of the Chapter

In this chapter, I concentrate a large portion of my focus on the asymmetric properties of *yinggai* and *keneng*, which are traditionally considered to be epistemic modal verbs in Chinese. That a number of difference between them with respect to superficial word order, compatibilities with Scope Bearing Quantifiers and Interrogative operators can be attributed to the major aspects: (i) the requirement of feature-valuation; (ii) the requirement of subjective/objective modal interpretation.

Yinggai, being polysemantic, is proposed to be obligated to enter into an Agree relation with T (raising to T_{superior} in particular, cf. Harwood 2014) to value its {uModal} feature. Once the uninterpretable feature of *yinggai* is properly valued, it will no longer be allowed to undergo further movement (see the freezing effect in Rizzi 2016). Under this proposal, the fact that *yinggai* cannot occur at the pre-subject position or sentential-final slot can be properly accounted for. As such movements would unavoidably violate the criterial condition.

In addition, given *yinggai* cannot move from the feature-value position, whereas it must have a subjective modal reading in the sense of Lyon (1977), the only valid way to attain such reading is to invoke feature-movement to Force (cf. S-Y. Lin 2012) which is subject to the Generalized Relativized Minimality (see Rizzi 2004) and the movement of { ν Epistemic} will be blocked by SBQs like *wh*-adverbials, negation and Focus. By this analysis, the reason why *yinggai* cannot be embedded under expressions is clarified.

By contrast, another EMV *keneng* does not seem to suffer from the constraints named above that are implemented on *yinggai*. It not only presents a rather free distribution by being able to occur at both sentential-initial/final positions, but also can be scoped by all kinds of SBQs mentioned above. Differing from *yinggai* which can also express deontic meaning, *keneng* can only be used to express epistemic reading. Therefore, I argue it is not compulsory for it to have an Agree relation with T heads, indicating *keneng* is not subject to the freezing effect brought up by feature-valuation. In addition, as I have argued in 3.1.3 and 3.1.4, *keneng* can be scoped by SBQs due to the fact that it does not have to undergo feature-movement to Force when staying in-situ; as to the situation in which *keneng* precede SBQs, I argue that it externally merges to Force without getting blocked by intervention effect. This analysis also conforms to S-Y. Lin's (2012) assumption that *keneng* can have either subjective or objective modal reading.

In the remainder of this chapter, I have made a brief reference to the issue of the difference between EMVs and EAs. Despite that some researchers assume *keneng* and *yinggai* to be adverbs, I concur with T-H. Lin (2012) who claims EMVs are verbs by nature by providing additional pieces of evidence. I have also suggested that the licensing of VP-ellipsis/fronting may not be the perfect diagnoses to tell EMVs from EAs.

At last, in 3.3 an attempt is made to regularize the cooccurrence of EMVs and EAs. The related data seem to suggest that EAs may either adjoin to $T_{\text{superior}}P$ or/and $T_{\text{inferior}}P$, or occupy the specifier position of $\text{Epis}P$.

4. Root Modals in Chinese

In Chapter 3, I have gone through several syntactic properties about EMVs in Chinese. In this Chapter, I will then turn to the domain of Root modal verbs (RMV), which are often assumed to be underneath EMVs in terms of structural hierarchy because they are part of an proposition instead of being ‘extra-propositional’.

In a very alike way, I will mainly address the asymmetries among root modal verbs that, as far as I know, have not been abundantly investigated, just like their epistemic counterparts. I will also endeavor to subsume the asymmetrical traits shown by root modals in question into the polysemantic/monosemic contrast again. That they behave differently on account of the requirement of feature-valuation instead of being a member of distinct subcategories, i.e., Deontic or Dynamic.

4.1 Basic facts and the Structure of Root modal verbs

As indicated in 1.3, root modals in Chinese conform to the general syntactic characteristics displayed by their counterparts in other languages. For example, root modals in Chinese can also be divided into Deontic modals and Dynamic modals, as Palmer (2001) suggests. A rough roster of root modals is repeated below:

(1) a. *Deontic Modals*

应该, 可以, 能, 会, 要

yinggai ‘ought to’, *keyi* ‘permitted to’, *neng* ‘permitted to’, *hui* ‘inclined to’, *yao* ‘obligated to’

b. *Dynamic Modals*

能, 会, 要, 肯, 敢

neng ‘be able to’, *hui* ‘be able to’, *yao* ‘want to’, *ken* ‘be willing to’, *gan* ‘dare’

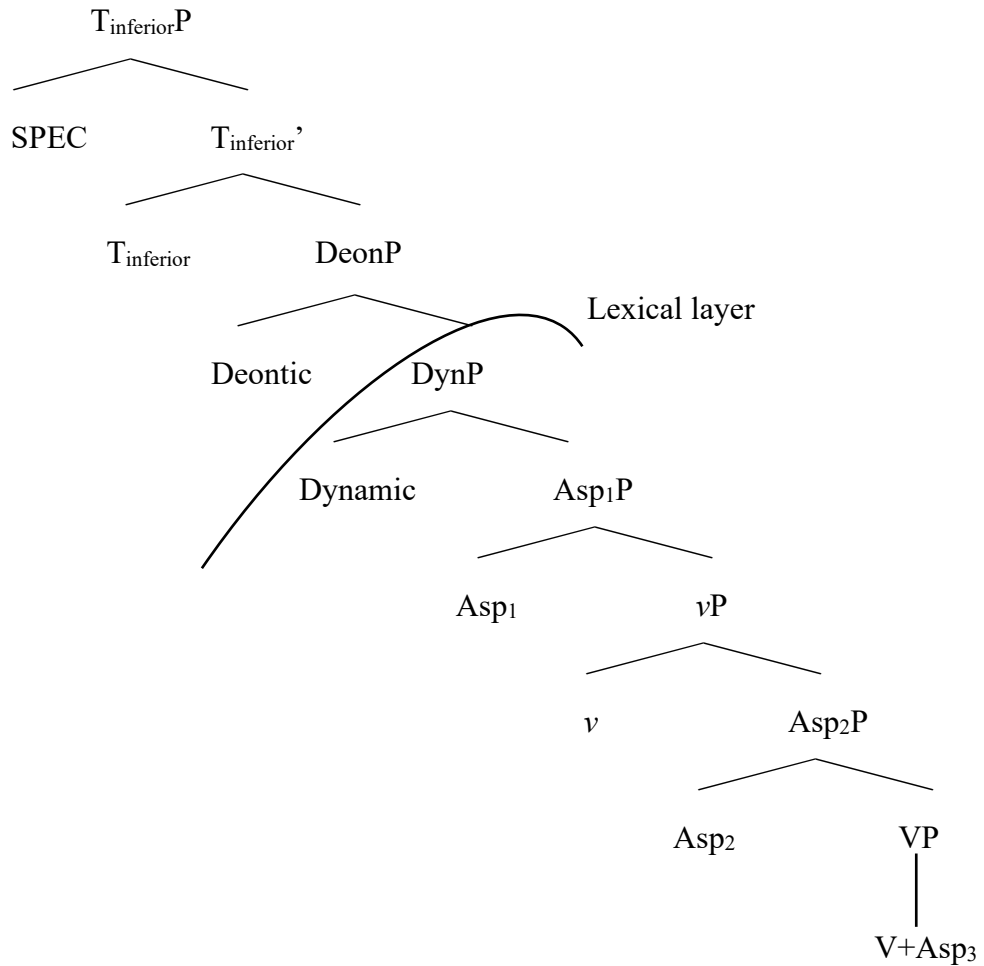
Also recall that in 1.3 I have shown that root modals in Chinese are only partially in consistency with Wurmbrand's (1999) proposal that modal verbs are all raising verbs, that although deontic modal verbs (DMV thereafter) can take expletive-like nominals as subject and license passive constructions, dynamic modal verbs (DyMV) cannot. I agree with Hu and Chen (2020) who conclude that on one hand DMVs should be treated as raising verbs, DyMV should be treated as control verbs on the other. Their conclusion stands true even if the same lexical entry is involved:

- (2) a. 图书馆要安静 (才行)。
 Tushuguan yao anjing (cai xing).
 library will^D quite then good
 'The library is supposed to remain silent.'
- b. 图书馆要安静 (才行)。
 *Tushuguan yao anjing (cai xing).
 library will^{Dy} quite then good
 Intended reading: 'The library is willingly to remain silent.'

Shown in (2), *yao*, when used as an DMV, can take a location as its subject. However, if *yao* intends to express one's volition, its subject must be animate.

As to the structural construction for root modals, the one depicted in 1.3 adopts the achievements of Hsu (2008) and Tsai (2015) while a few modifications are augmented. First, let us revise the root modal structure given in 1.3, repeated as (3):

(3)



The structure in (3) with respect to the configurational relation between $DynP$ and vP is more similar to Hsu's (2008: 59), in which $DynP$ is assumed to be higher than vP . This is not an audacious move since $DyMV$ always precede canonical light verbs like *ba* as well as the lower/higher types of light verb (see Tsai 2007). Consider the following examples:

- (4) a. 他敢把钱拿去投资。
Ta gan ba qian naqu touzi.
he dare^{Dy} BA money take-go investigate
'He has the gut to investigate with the money.'
- b. 他敢切大菜刀。

Ta gan qie_i-USE da caidao t_i.
 he dare^{Dy} cut big cleaver
 ‘He has the gut to cut with the big cleaver.’

c. 他敢用大菜刀切。

Ta gan yong da caidao qie.
 he dare^{Dy} use big cleaver cut
 ‘He has the gut to cut with the big cleaver.’

d. 他敢让我用大菜刀。

Ta gan rang wo yong da caidao.
 he dare^{Dy} cause I use big cleaver
 ‘He has the gut to make me cut with the big cleaver.’

According to Tsai (2007), *yong* in (4c) is assumed to be the lower light verb introducing the theta role TOOL, while *rang* in (4d) is taken to be the higher one introducing the theta role CAUSEE. Despite that they demonstrate several distinct syntactic behaviors (see Chiu 2010 for more details), none of them can occur at a pre-DyMV position⁴².

Nevertheless, the projection of DyMV is assumed to be lower than *v* in Tsai (2015: 15), which seems to conflict with the observations in (4). Although he does not elaborate the motive for such configuration, this assumption also seems to be plausible because DyMV preserves more verbal vestiges than DMVs. To instantiate its verbal nature, observe the *hui*-NP phrase:

(5) 他会日语。
 Ta hui Riyu.
 he can^{Dy} Japanese
 ‘He can speak Japanese.’

⁴² (4b) is a special case of covert light verb, in that case the lexical verb raises to the vacate *v*, as argued by Chiu (2010: 131).

One thing to note here is that (5) may not entail any PF ellipsis, since not only it can be uttered without any antecedent, but also similar forms of pseudo-gapping are generally disallowed in Chinese:

- (6) a. 他应该去学校, 我也应该学校。
 *Ta yinggai qu xuexiao, wo ye yinggai xuexiao.
 he should^D go scholl, I too should^D school
 ‘He should go to school, and so should I.’
- b. 你可以学日语, 你也可以韩语。
 *Ni keyi xue Riyu, ni ye keyi Hanyu.
 you can^D learn Japanese you too can^D Korean
 ‘You are allowed to learn Japanese, and Korean too.’

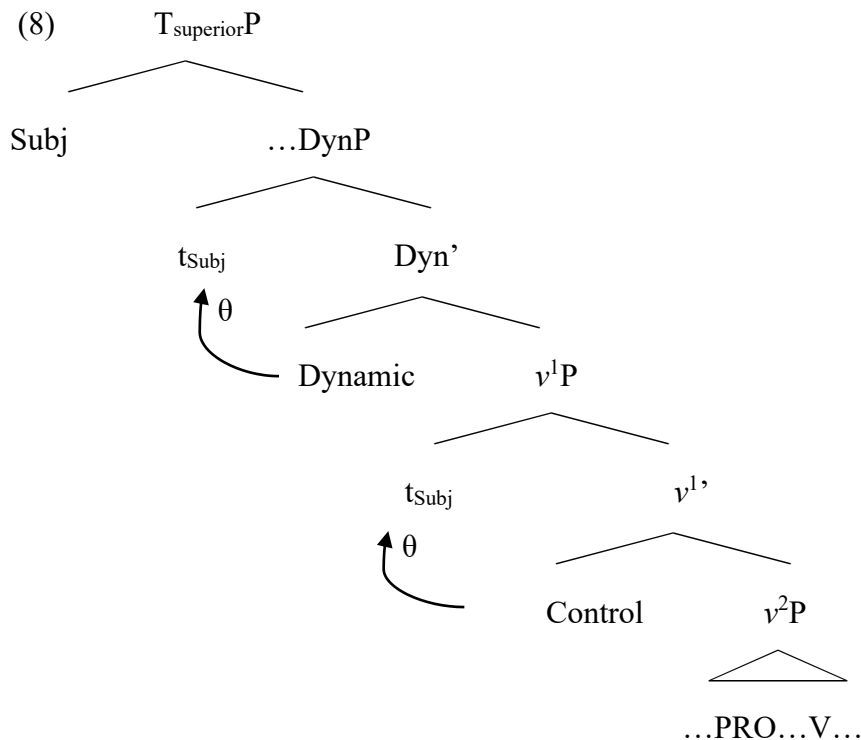
As shown in (6a-b), neither the verb between the DMV and the object in (6a) or the verb after the DMV in (6b) can be elided, which again suggests the potential verb *shuo* ‘speak’ is not deleted from the clause in (5).

Likewise, assuming DyMVs are control verbs does not justify the proclaim that *v* takes DynP as complement. If the simplified schema for control verb in (7a) is correct, it predicts a DyMV would take a higher position since it can precede the control verb. Observe (7b):

- (7) a. Subj [_{vP2} Control [_{vP1} PRO V]]
- b. 我敢试着去克服恐惧。
 Wo gan shizhe qu kefu kongju.
 I dare^{Dy} try go overcome fear
 ‘I dare try to overcome the fear.’

For the aforesaid reasons, I adopt Hsu’s (2008) hierarchical system for root modal verbs in which DynP locates higher than *vP*. However, one more theoretical postulation seems to

be needed; namely, assuming DyMVs to be control verbs amounts to claiming that they are also capable of assigning theta roles, which seems to be the case. For instance, the subject of (7b) is assigned with TRYER and DARER. To make this theta-relation possible, I tentatively propose that the inner subject would first move to [SPEC, DynP] before it further raises to [SPEC, T_{superior}P] or even [SPEC, TopP]. The theta assignment in question can be portrayed by the following diagram⁴³:



The structure illustrated above can be further borne out by the clause in which two control verbs are in presence:

⁴³ This approach seems to go against the basic notion of TRAP (see 1.2) which dictates that theta structure can only be built by external merge (cf. the non-trivial chain in Chomsky 1995: 313). One solution to (8) is assuming it is another PRO, coindexed with the subject, gets externally merged with [SPEC, vP]. The phonetically realized subject then externally merges with [SPEC, DynP] to acquire the theta of DARER.

- (9) 我试着逼李四吃臭豆腐。
 Wo shizhe [bi Lisi [PRO_i chi choudoufu.]
 I try force Lisi eat stinky-tofu
 ‘I tried to force Lisi to eat stinky tofu.’

If my analysis is roughly plausible, the subject (or another PRO) in (9) may initially be base-generated at the SPEC of the lower control verb *bi*, which then raises to the SPEC of the higher verb to acquire the role of TRYER after gets assigned the theta role FORCER. Alternatively, one can also assume that there is an additional PRO in the complement clause of *shizhe* in (9) that takes the subject as its controller. In both approaches, the subject will attain the expected theta roles.

In this Chapter, given the polysemantic/monosemic contrast plays a vital part in the subsequent discussions, it is necessary to once again highlight which DyMVs are polysemantic and which are not (cf. 1.3):

- (10) a. *Polysemantic DyMVs* (boldface indicates deontic meaning)
- 会
 hui: (i) ‘be able to’; (ii) **‘be dispositional to’**; (iii) ‘be volitional to’
- 要
 yao: (i) ‘be volitional to’; (ii) **‘be obligatory to’**
- 能
 neng: (i) ‘be able to’; (ii) **‘be allowed to’**
- b. *Monosemic DyMVs*
- 肯
 ken: (i) ‘be volitional to’
- 敢
 gan: (i) ‘be audacious to’

As shown in (10), polysemantic DyMVs can be interpreted as Deontic as well. Hence calling them as ‘DyMV’ may seem insufficient because they can well be non-dynamic. In fact, such nomenclature may avoid the problem of confusing the modal verbs which have inherent deontic reading with those attaining such reading via derivation. I will return to this issue in the remainder of this section.

With the establishment of the projection of DynP, let us now consider the one above it: DeonP. I have argued DMVs should be analyzed as raising verbs as Wurmbrand (1999) and Hu and Chen (2020) suggest in 1.3. This proclaim implies the subject does not merge to the SPEC position of DMVs, neither externally nor internally. Assuming DMVs induce higher projection than DyMV is also not surprising since they always precede DyMVs in the context of multiple occurrences of root modals. As illustrated in (11 a-b), DMV must precede DyMV:

- (11) a. 李四应该会开车（才行）。
 Lisi yinggai hui kaiche (cai xing).
 Lisi should^D can^{Dy} drive then good
 ‘Lisi is supposed to be able to drive.’
- b. 李四会应该开车（才行）。
 *Lisi hui yinggai kaiche (cai xing).
 Lisi can^{Dy} should^D drive then good

As noted in 1.3, DMVs differ from each other with regard to the possibility of expressing multiple meanings, as illustrated as follows:

- (12) a. *Polysemantic DMVs* (boldface indicates epistemic meaning)
yinggai: (i) ‘ought to’; (ii) **‘it is possible that’**
- b. *Monosemic DMVs*
keyi: (i) ‘be allowed to’⁴⁴

Note that the same problem of (10) emerges, that *yinggai* can also be used as an EMV, as

⁴⁴ According to Liu et al. (2006) and Hsu (2008), *keyi* is treated as a polysemantic modal verb being able to express the Ability meaning:

- (i) 他可以游一千米。
Ta keyi you yiqianmi.
he can^D swim one-thousand-meter
‘He can swim one kilometer.’
- (ii) 风力可以发电。
Fengli keyi fadian.
wind-power can^D generate
‘The wind power can generate electricity.’

In fact, one of my informants uses (i-ii) as counterexamples to suggest *keyi* can also mean Ability. However, I still consider *keyi* above as a Permission-indicating modal verb as T-H. Lin (2012) does. First, *keyi* in (i) implies that ‘he can swim one kilometer if certain condition is satisfied.’ To showcase that implicature, observe the following conjunction structures:

- (iii) 他今天可以游一千米，明天不可以。
Ta jintian keyi you yiqianmi, mingtian bu keyi.
he today can^D swim one-thousand-meter tomorrow not can^D
‘He can swim one kilometer today but can’t tomorrow.’
- (iv) 他冬天会游泳，夏天不会。
#Ta dongtian hui youyong, xiatian bu hui.
he winter can^{Dy} swim summer not can^{Dy}
‘He can swim in the winter but not in the summer.’

The reason why the second half conjunction can be negated in (iii) is that the modality force of *keyi* comes externally and could easily be interfered by external conditions, which makes it a deontic modal. By contrast, the genuine Ability-indicating *hui* can hardly be meddled by external conditions hence the negated conjunction in (iv) brings about infelicity.

thoroughly discussed in Chapter 3, hence it seems inappropriate to call it as an DMV. Thus, for the purpose of discussion, we have to reconsider the issues of terminology. It should be pointed out that there is a significant difference between modal verbs which have Deontic-Dynamic readings (*hui*, *yao* and *neng*) and those have Epistemic-Deontic readings (*yinggai*). To name a few, only the former can have main verb usages (cf. (5) for the case of *hui*). (13a-b) present a picture that *yao* and *neng* can take nominals as complement, whereas *yinggai* in (13c) cannot.

- (13) a. 李四唱歌要钱。
 Lisi changge yao qian.
 Lisi sing-song require money
 ‘Lisi sings songs for money.’
- b. 李四能歌善舞。
 Lisi neng-ge shan-wu.
 Lisi can^{Dy}-song good at-dance
 ‘Lisi can sing songs and dance.’
- c. 李四应该歌舞。
 *Lisi yinggai gewu。
 Lisi should^D song-dance
 Intended reading: ‘Lisi should sing songs and dance.’

In addition, *yinggai* must precede *hui*, *yao* or *neng* even though the latter three also indicate deontic meaning. In (14a-b), Obligation-indicating *yinggai* and *yao* are involved. Crucially, only (14a), in which *yinggai* precede *yao*, is acceptable.

- (14) a. 李四还是应该要道歉。
 Lisi haishi yinggai yao daoqian.
 Lisi still should^D will^D apologize

‘Lisi is supposed to apologize anyway.’

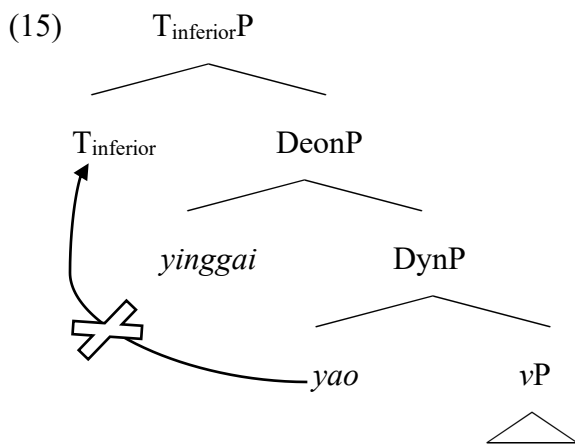
b. 李四还是要应该道歉。

*Lisi haishi yao yinggai daoqian.

Lisi still will^D should^D apologize

‘Lisi is supposed to apologize anyway.’

In order to not miss out the facts given above; it is necessary to postulate a projection hierarchically higher than DyMVs to give rise to the correct word order. Under this postulation, the ungrammaticality of (14b) can then be resorted to the violation to the Relativized Minimality:



In (15), an DeonP is projected above DynP. Note that *yinggai* and *yao* are both polysemantic, thus either of them must raise to a T head to undergo feature-valuation. If we do not assume there is a height difference between *yinggai* and *yao* (even though they similarly have deontic interpretations), there would be nothing precluding the possibility that *yao* firstly raises to the higher T_{superior} . As a consequence, such derivation can only be spelt-out as the sequence *yao-yinggai* (cf. (14b)) which is not acceptable. On the contrary, if we adopt the structure in (15), the correct word order can be ensured in two respects: (i) raising *yao* before *yinggai* would violate the Relativized Minimality, since both of them are akin to each other (i.e., deontic modal verb); (ii) if *yinggai* raises to T_{inferior} by option, still no correct

order is expected. Since *yinggai* with feature-valuation being done would in turn blocks the raising of *yao* to T_{superior} . Therefore, the only plausible derivation would require *yinggai* to be hierarchically higher than *yao* before merging to T head, and it must raise to the higher T head to avoid the potential violation to the Relativized Minimality.

In association with the concepts given above, a modified definition of conventional DMV and DyMV can be as follows:

- (16) a. *DMV*
Modal verbs that have Epistemic-Deontic interpretations.
- b. *DyMV*
Modal verbs that have Deontic-Deontic interpretations.

To conclude, in this section I have discussed some basic traits of root modal verbs and the syntactic structure of them. In general, DMVs are argued to be raising verbs while DyMVs are control verbs. In addition, I propose a modal hierarchy that is more related to Hsu (2008) than to Tsai (2015) by claiming the projection of dynamic modal verbs is higher than vP . Finally, the terminological issues with DMV and DyMV are dealt with, motivated by the needs to distinguish modal verbs that may have the same meaning but present sequential order. In a word, DMV can express deontic or higher (i.e., epistemic) meaning, in the meantime, DyMV can express dynamic or higher (i.e., deontic) meaning.

4.2 The asymmetry between Root modal verbs

In this section, I will discuss the asymmetrical properties shown by root modals. It is conventionally considered that the difference between root modal verbs can be attributed to, for instance, the dichotomy of raising vs. control. On the basis the well-accepted notions of such distinctions, I will provide several arguments that provide with a new angle to examine the cluster of root modal verbs with respect to whether they are required to enter into an

Agree relation with T heads or not. Thereby, the following issues might be properly accounted for: (i) the possibility of applying the doubling of verb; (ii) the constraint on multiple occurrence; (iii) the possibility of *mei*-negation.

4.2.1 Doubling the RMVs

Besides cleft sentence and *lian...dou* sentence in (17), there are two more variants of focus construction observed in Chinese by Cheng and Vincente (2013): verb doubling and *lian...dou* verb doubling, illustrated in (18).

(17) *Cleft with shi*

- a. 他是昨天来的北京。
 Ta shi [Focuszuotian] lai de Beijing.
 he COP yesterday come DE Beijing
 ‘It was yesterday that he came to Beijing.’

Lian...dou focus

- b. 他连北京都没去过。
 Ta [Focuslian Beijing] dou mei qu-guo.
 he LIAN Beijing DOU have-not go-ASP
 ‘He haven’t even been to Beijing.’

(18) *Verb doubling*

- a. 看,我是看过了。
 Kan, wo shi kan-guo le.
 see I COP see-ASP ASP
 ‘Speaking of seeing, I indeed saw that (but...)’

Verb doubling with lian...dou

- b. 我连看都没看过。
 Wo lian kan dou mei kan-guo.

I LIAN see DOU have-not see-ASP

‘Speaking of seeing, I didn’t even see it.’

Those four types of focus sentences are argued to have similar internal syntax according to Cheng and Vincente (2013), and the non-verbal focus sentences in (18) should also be able to be regularized with the same analysis that applies to their nominal counterparts in (18). Following Cheng (2008), in which *shi* in such structure is referred to as *floating shi* because a variety of constituents of the small clause subject can be extracted to the left of it, what appears to the immediate right of *shi* is the focus, while constituents on the left side are topics. Hence, (18a) may have a following structure⁴⁵:

(19) [TopicKan], [TopicWO] shi [Focuskan-guo] le.

The focused *kan* in (19) is also proposed to be a verum focus (cf. Krifka 2007) instead of a contrastive one in Cheng and Vincente (2013: 6), which reemphasizes a truth condition. What is essential to the present work is that they argue the verb doubling involves movement due to the following facts: First, it is subject to island intervening effect.

(20) 看, 我听说了[他是看过的那个传言]。

*Kan, wo tingshuo-le [ta shi kan-guo de
chuanyan].

see I hear-ASP he COP see-ASP DE
rumor

Intended reading: ‘Speaking of seeing, I’ve heard about the rumor that he saw.’

⁴⁵ Cheng and Vincente (2013) suggest that the morphology fuse analysis (see Marantz 1984; Halle and Marantz 1993; Nunes 2004) may not be able to account for Chinese verb doubling, as there is no legit host for such fusion (see Marantz 1984; Halle and Marantz 1993; Nunes 2004).

In (20), the dependency between two *kans* is interfered by a Complex NP Island. This indicates verb doubling in Chinese has the structure like (21):

(21) [_{Topic} Kan_i], wo pro_{PRED} shi [_{SC} [_{Focus} kan_i-guo] t_{pro}] le.

My interest here is that the verb doubling effect is observed with some of the RMVs, whereas it is impossible in the case of others. In general, only monosemic RMVs are allowed to be doubled:

(22) *The case of DMVs*

a. (这件事) 可以是(可以)的。

Zhejian shi, keyi shi keyi (de).

This-CL matter can^D COP can^D DE

‘Speaking of being allowed, it is allowed.’

b. (这件事) 应该是(应该)的。

Zhejian shi, yinggai shi yinggai (de).

This-CL matter should^D COP should^D DE

*Reading a: ‘Speaking of being obligated, it is obligated.’

*Reading b: ‘Speaking of my guessing, it may be allowed.’

(23) *The case of DyMVs*

a. 敢, 他是敢来(的)。

Gan, ta shi gan lai (de).

dare^{Dy} he COP dare^{Dy} come DE

‘Speaking of being audacious, he is audacious to come.’

b. 肯, 他是肯来(的)。

Ken, ta shi ken lai (de).

will^{Dy} he COP will^{Dy} come DE

‘Speaking of being willing, he is willing to come.’

- c. 会, 他是会来/开车(的)。

Hui, ta shi hui lai/kaiche (de).

will^{D/Dy}he COP will^{D/Dy}come/drive DE

*Reading a: ‘Speaking of being deponitional, he is deponitional to come.’

??Reading b: ‘Speaking of being able, he is able to drive’

- d. 要, 他是要来(的)。

Yao, ta shi yao lai (de).

will^{D/Dy}he COP will^{D/Dy}come DE

??Reading a: ‘Speaking of being willing, he is willing to come.’

*Reading b: ‘Speaking of being obligated, he is obligated to come.’

- e. 能, 他是能来/弹钢琴 (的)。

neng, ta shi neng lai/tan gangqin (de).

can^{D/Dy} he COP can^{D/Dy}come/play piano DE

?Reading a: ‘Speaking of being allowed, he is allowed to come.’

*Reading b: ‘Speaking of being able, he is able to play the piano.’

In (22), a sharp contrast emerges: within the group of DMVs, only the monosemic *keyi* in (22a) can be doubled. The doubling of the polysemantic *yinggai*, on the other hand, is invariably out. In the case of DyMV, the same observation is obtained. The monosemic *gan* and *ken* in (22a-b) are unproblematically doubled, whereas polysemantic *yao*, *hui* and *neng* are not allowed to undergo the process of doubling.

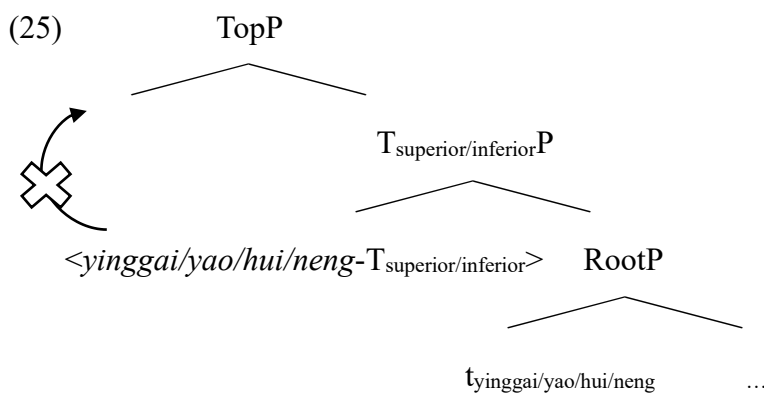
The doubling of RMVs behaves on par with the verb doubling discussed in Cheng and Vincente (2013) not only on the ground of semantic interpretation (verum focus affirming the proposition), but also the obedience to locality constraint. For example, the doubling of *ken* in (24) is also intercepted by islands effect:

- (24) 肯, 我知道他肯去的意图。

*Ken, wo zhidao [ta ken qu de yitu].
 will^{Dy} I know he will^{Dy} go DE intention
 ‘Speaking of be willingly, I’m aware of the intention behind his willingness.’

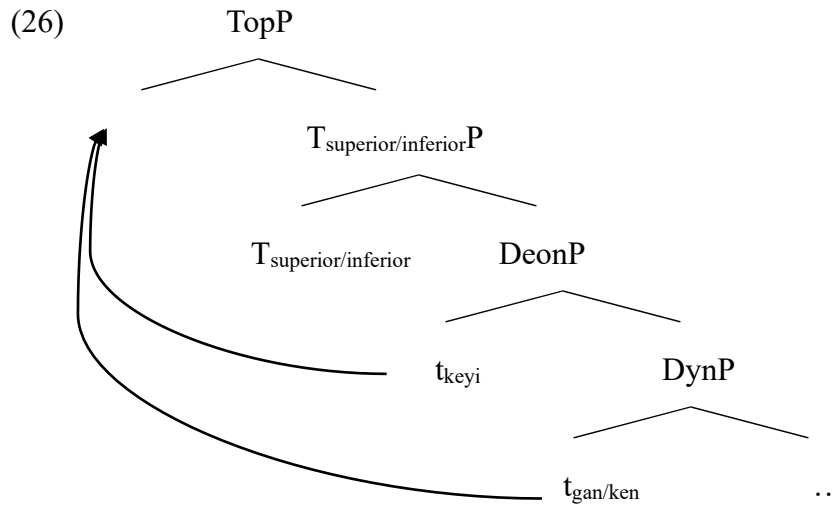
The data illustrated in (22-23) suggest a very interesting observation that among either DMVs or DyMVVs, there seems to be an inconsistency with regard to the licensing of verb doubling. On one hand, for the class of DMV, *keyi* instead of *yinggai* can be doubled, as in (22). On the other hand, in the case of DyMVVs, although *ken* and *gan* can be doubled without any problem, *yao*, *hui* and *neng* are much more ill-formed when both copies are pronounced.

I argue such contrast rests upon their polysemantic/monosemic natures. Specifically, *keyi*, *ken* and *gan* can only have one modal meaning, whereas *yao*, *hui* and *neng* can have plural. Recall that I have shown in Chapter 3 that one of the essential differences between epistemic *keneng* and *yinggai* is that *yinggai* can additionally express deontic meaning, thus it must have its {uModal} valued via Agree with a T head. In that case, *yinggai* would end up in a feature-valuing position and lose the possibility to participate into further computations. And by this analysis, the ban on *yinggai* preceding the subject follows. In the context of RMVs, the same freezing effect is again observed, that polysemantic RMVs cannot be doubled if Cheng and Vincente’s (2013) movement-based analysis were defensible. The violation to the freezing effect can be schematized as follows:



By contrast, monosemic *keyi*, *ken* and *gan* are not required to have their intended meaning

decided through an Agree relation with T, nothing stops them from moving to the left periphery:



My analysis for the doubling of modal verbs stands true for EMVs as well. As indicated in (22b), *yinggai* is prohibited from being doubled regardless whether it is interpreted as epistemic or deontic modal. However, its EMV counterpart *keneng* which has only one meaning can indeed appear in such construction, as in (27):

- (27) a. 可能, 他是可能喜欢我的。
 Keneng, ta shi keneng xihuan wo de.
 may^E he COP may^E like I DE
 ‘Speaking of possibility, it is possible that he likes me.’
- b. 应该, 他是应该喜欢我的。
 *Yinggai, ta shi yinggai xihuan wo de.
 may^E he COP may^E like I DE
 ‘Speaking of subjective conjecture, he may like me.’

At this point, the proposed analysis for such asymmetry between RMVs seems to be

feasible as the dichotomy of Deontic-Dynamic does not suffice to provide a uniform generalization. However, there might be a potential counterexample to our current theory. Note the fact *neng* can loosely be doubled as long as it is interpreted as a Permission-indicator, illustrated by (23e). The situation is clearer if *neng* is negated:

- (28) a. 能, 你是不能来(的)。
 Neng, ni shi bu-neng lai (de).
 can^D you COP not-can^D come DE
 ‘Speaking of being allowed, you are not allowed to come.’
- b. 能, 他是不能弹钢琴(的)。
 *Neng, ta shi bu-neng tan gangqin (de).
 can^{Dy} he COP not-can^{Dy} play piano DE
 ‘Speaking of being able to play the piano, he is not able to play the piano.’

Shown in (28), when interpreted as Permission-indicating, *neng* is allowed to be doubled, as (28a). However, the Ability-indicating *neng* in (28b) is banned from occurring in such construction unless the interpretation is ‘he is not allowed to play the piano’. It should be made clear that the possibility of triggering the doubling is irrelevant to the specific meaning of each RMVs, as Volition-indicating *yao* and *ken* would lead to different outcomes of verb doubling (cf. (23b) vs. (23d)).

One speculation is that *neng* can be treated as either a polysemantic modal verb or a monosemic one. That means it is only necessary to determine whether *neng* carries {uModal} or {iModal} at the point it enters the numeration. In that case, the monosemic *neng* does not need to raise to a feature-valuing position hence will not be halted by the freezing effect. I will discuss in the subsequent sections, *neng* differs from other DyMV in other aspects as well, and that can again be reduced to the possibility that there are two lexical entries of *neng*.

In this subsection, an important asymmetric property demonstrated by RMVs is argued to be predicted by the dichotomy of polysemantic/monosemic instead of the one of Deontic-Dynamic. That those monosemic RMVs without the constrain of obligatory feature-valuation

can be freely moved to the left periphery to be realized as the verb doubling construction, whereas polysemantic RMVs must be raised to T heads to have the uninterpretable {uModal} feature valued, hence are subject to the freezing effect and cannot be found in the verb doubling.

4.2.2 Constraints on RMV Multiple Occurrence

Unlike many other languages, Chinese allows more than one RMV in one clause. The main purpose of this subsection is to reach a generalization of licit RMV sequences, including which of them is (dis)allowed and why it is (dis)allowed. It is argued that multiple RMV is subject to a two-layered principle: (i) RMVs indicating deontic meaning must precede those indicating dynamic meaning; (ii) RMVs with more than one meaning must precede those with only one.

By contrast, languages like English only allows the stack of modal verbs where no more than one finite auxiliary is present (i.e., Epistemic-Root sequence). Consider (29a-d), as the examples herein exhibit, the occurrence of RMV cannot be more than one in languages like English and German.

(29) *English*

- a. He must have been ticketed.
- b. *He must can cook.

German (adapted from Wurmbrand 2001: 186)

- c. Er dürfte zu Hause sein müssen.
He might^E at home COP must^D
'He might have to be at home.'
- d. *Er wird wieder singen müssen.
He will^D again sing must^D
'It will be the case that he must sing again.'

In a very different way, Chinese not only allows Epistemic-Root sequence, but also Root-

Root. In the following demonstrations, I attempt to systemize all the possible Root-Root cooccurrence scenarios:

(30) *In DMV-DMV sequence*

他应该可以来 (才行)。

Ta (*keyi)yinggai keyi lai (cai xing).

he can^D should^D can^D come then good

‘It is obligatory for him to be allowed to come.’

(31) *In DMV-DyMV sequence*

a. 你 (要) 应该要原谅他 (才行)。

Ni (‘yao) yinggai yao yuanliang ta

you will^D should^D will^D/*will^{Dy} forgive he

‘You are obligatory to forgive him.’

b. 你应该会开车(才行)。

Ni (*hui) yinggai hui kaiche (cai xing).

you can^{Dy}/will^D should^D can^{Dy}/*will^D drive (then good)

‘You are obligatory to be able to drive.’

c. 你应该能开车(才行)。

Ni (*neng) yinggai neng kaiche (cai xing).

you can^{Dy}/can^D should^D can^{Dy}/*can^D drive (then good)

‘You are obligatory to be able to drive.’

d. 你应该肯吃苦(才行)。

Ni (*ken) yinggai ken chiku (cai xing).

you will^{Dy} should^D will^{Dy} eat-bitter then good

‘You are obligatory to be willingly to endure hardships.’

e. 你应该敢表达自己的意见。

Ni (*gan) yinggai gan biaoda ziji-de yijian.

you dare^{Dy} should^D dare^{Dy} express self-DE opinion

‘You are obligatory to dare express your opinion.’

f. 你可以要/会/能/

*Ni keyi yao/hui/neng

you can^D will^{D-Dy}/will^D-can^{Dy}/can^{D-Dy}

g. 你可以敢/肯...

?Ni keyi gan/ken...

you can^D dare^{Dy}/will^{Dy}

(32) *In DyMV-DyMV sequence*

a. 你要会开车(才行)。

Ni (*hui) yao hui kaiche (cai xing).

you can^{Dy} will^D/*will^{Dy} can^{Dy} drive then good

‘You are obligatory to be able to drive.’

b. 你要肯吃苦。

Ni (*ken) yao ken chi-ku.

you will^{Dy} will^D/*will^{Dy} will^{Dy} eat-bitter

‘You are obligatory to be willingly to endure hardships.’

c. 你要敢表达自己的意见。

Ni (*gan) yao gan biaoda ziji-de yijian.

you dare^{Dy} will^D/*will^{Dy} dare^{Dy} express self-DE opinion

‘You are obligatory to dare express your opinion.’⁴⁶

d. 你要能总结教训。

Ni (*neng) yao neng zongjie jiaoxun.
you can^{Dy} will^D/*will^{Dy} can^{Dy} sum-up instruction

‘You are obligatory to be able to draw lessons from the past.’

e. 他会肯来的。

Ta (*ken) hui ken lai de.
he will^{Dy} will^D/*can^{Dy} will^{Dy} come DE

‘He is dispositional to be willingly to come.’

f. 他会敢面对困难的。

Ta (*gan) hui gan miandui kunnan de.
he dare^{Dy} will^D/*can^{Dy} dare^{Dy} face difficulty DE

‘He is dispositional to face the difficulties.’

g. (只要经过心理准备) 他就能敢说出真相。

(Zhiyao jingguo xinlizhunbei), Ta jiu (*gan)
as-long-as through mental-preparation he then dare^{Dy}
neng gan shuochu zhenxiang.

⁴⁶ One of my informants suggests that volition-indicating *yao* can be followed by *gan* or *ken* in the following situations:

(i) (屡次失败后) 我决定要敢打破常规。

(Lüci shibai hou) wo jueding yao gan dapo
changgui.
multiple-time failure after I decide will^{Dy} dare^{Dy} break
regulation

‘After many times of failure, I made up my mind that I will be able to have to courage to think out of the box.’

As the full-on generalizations made in the beginning of this subsection show, the sequence illustrated above in (i) still falls inside my generalization, that even in the case of multiple dynamic modals, the polysemantic one must precede the monosemic one.

can^D dare^{Dy} say-out truth

‘(As long as it is mentally prepared), he is able to have the courage to tell the truth.’

h. (只要经过心理准备) 他就能肯说出真相。

(Zhiyao jingguo xinlizhunbei), Ta jiu (*ken)

as-long-as through mental-preparation he then will^{Dy}

neng ken shuochu zhenxiang.

can^D will^{Dy} say-out truth

‘(As long as it is mentally prepared), he is able to be willingly to tell the truth.’

The cooccurrences of multiple RMVs are, as far as I and a number of my informants can think of, manifested above in (30-32). Let us discuss three different situations one by one:

First, in the case of DMV-DMV illustrated in (30), there is only one plausible cooccurrence where *yinggai* precedes *keyi*. (30) again suggests that DMVs in Chinese are raising verbs since the subject obviously has no theta-relation with *yinggai*. Crucially, a reversed sequence *keyi-yinggai* is not acceptable. The traditional typology might not be helpful, since *yinggai* and *keyi* are both deontic modal verbs. Intuitively, one may attempt to explain this phenomenon on semantic ground by assuming that it would be semantically undesirable for someone to ‘be allowed to have an obligation’. However, I propose the ill-formedness of such sequence roots in syntactic computation. Note that a paraphrased Permission-Obligation sequence does not cause syntactic/semantic implausibility:

(33) 赋予他此种义务是被允许的。

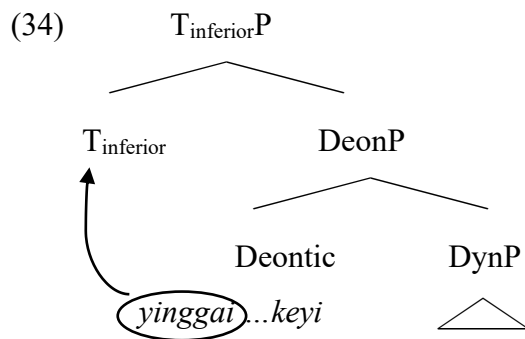
Fuyu ta cizhong yiwu shi bei yunxu de.

assign he this-type obligation COP PASS allow DE

‘It is allowed to make him have this type of obligation.’

In effect, the contrast between *yinggai-keyi* and *keyi-yinggai* receives an expedient explanation under the core proposal of this dissertation: polysemantic modal verbs are

imposed with Agree-requirement. In this case, *yinggai* is the polysemantic one hence must raise to T to specify its meaning. The *yinggai-keyi* sequence can be easily attained by the raising operation in question:



Yinggai, when appears before *keyi*, can merge to either T_{superior} or T_{inferior} because there is no another polysemantic modal verbs (no need to raise to the higher T to avoid intervening effects). On the other hand, being monosemic, *keyi* is not required to raise to T and optimally stays in-situ. By contrast, if the intended word order is *keyi-yinggai*, it would then be mandatory for *keyi* to penetrate the blocking of *yinggai*, which previously raises to T_{inferior} , violating the Relativized Minimality. One may claim it is possible for *keyi* to raise to T_{superior} before *yinggai* does, resulting in *keyi-yinggai* sequence. However, this approach rests on an assumption that *keyi* raises to a T in the first place to generate the intended word order, which

is poorly motivated since even if *keyi* does not do so we can still obtain the correct output⁴⁷. Oppositely, if *yinggai* does not raise to T, the Full Interpretation is undermined.

Second, I argue the theory given above is also capable of dealing with the cases of DMV-DyMV. Let us now consider (31a-e), in which grammaticality obtains as long as *yinggai* appears before DyMVs, and note that DyMV come after *yinggai* can only have Dynamic interpretations (Ability or Volition). This is not surprising as Deontic modal is commonly acknowledged to be higher than Dynamic modal (see Hsu 2008, T-H. Lin 2012, Tsai 2015). However, one exception is that *yao*, as long as it is interpreted as an Obligation-indicator, it can appear either before or after *yinggai* (*yinggai-yao* is still more natural). That amounts to saying that there are two *shoulds* in one clause, and regardless which one of them is dispensed, the interpretation of (31a) would not alter. One possible analysis is that the *yinggai-yao* sequence is formed by external set-merge to avoid the violation to the Full Interpretation (only one *should* is mapped into semantic component).

(35) a. *External set-Merge of yinggai-yao before entering the numeration*

⁴⁷ Assuming the raising of *keyi* is motivated by the requirement of ‘strengthening T_{superior}’ does not remedy anything, as even if the subject stays inside vP, the grammaticality is not improved, in contrast to the *yinggai-keyi* sequence:

- (i) 可以应该他去学校。
 *Keyi yinggai ta qu xuexiao.
 can^D should^D he go school
 ‘It is allowed for him to be obligatory to go to school.’
- (ii) 应该可以他去学校。
 Yinggai keyi ta qu xuexiao.
 should^D can^D he go school
 ‘It is obligatory for him to be allowed to go to school.’

Merge (*yinggai, yao*) → {*yinggai, yao*} (unordered)⁴⁸

b. 你应该要马上会开车。

Ni yinggai-(*mashang)yao mashang hui kaiche.
you should^D-(immediately)should^D immediately will^{Dy} drive
'You should be able to drive immediately.'

c. 你马上要会开车。

Ni mashang yao (mashang) hui kaiche (cai xing).
you immediately will^D immediately can^{Dy} drive then good
'You are obliged to be able to drive immediately.'

The examples in (35b-c) demonstrate that although the adverbial *mashang* 'immediately' may occur before or after Obligation-*yao* in a generic modal environment (35c), it cannot intervene the sequence *yinggai-yao* (35b). This contrast may contribute to the present argument that *yinggai-yao* is a morphological word hence cannot be parted.

One of the important consequences of the operation formulated in (35a) is that *yinggai-yao* is then a sole syntactic object (SO). And this SO can be properly interpreted without violating Full Interpretation. As for the sequence *yinggai-yao*, recall *yao* and *yinggai* are

⁴⁸ One may wonder if there are any other cases of fused modal verbs. If the presumption that modal verbs with the same meaning can be lexically fused, it is predictable that combinations like *keyi-neng*^{Permission}, *yao-ken*^{Volition}, etc. is also valid. The issue is, their grammaticality is not consistent. Observe (i-ii):

(i) 这儿可以能抽烟。

?Zher keyi-neng chouyan.
here can^D-can^D smoke
'One can smoke here.'

(ii) 老师要肯今年退休。

??Laoshi yao-ken jin'nian tuixiu.
teacher will^{Dy}-will^{Dy} this-year retire
'The teacher is willing to retire this year.'

Thus, it seems that the fusion of modal verbs with identical meaning might be an ongoing process of grammaticalization. Since some of the instances are more formalized while some others are not as much.

argued to be incompatible with verb doubling structure (cf. 4.2.1) due to the movement restriction induced by feature-valuation (the freezing effect). Interesting enough, forming the compound of *yinggai-yao* or *yao-yinggai* renders the doubling of *yao* or *yinggai* much more acceptable. As illustrated below, *yao* and *yinggai* are generally prohibited from undergoing the Focus-driven doubling (cf. 4.2.1), as repeated in (36a-b). However, as shown in (36b-c), it becomes more acceptable if the source of such doubling is the fused *yinggai-yao* compound.

- (36) a. 要， 你是要原谅他的。
 *Yao, ni shi yao yuanliang ta de.
 will^D you COP will^D forgive he DE
 ‘Speaking of being obligated, you are obligated to forgive him.’
- b. 应该， 你是应该原谅他的。
 *Yinggai, ni shi yinggai yuanliang ta de.
 should^D you COP should^D forgive he DE
 ‘Speaking of being obligated, you are obligated to forgive him.’
- c. 要， 你是应该要原谅他的。
 ?Yao, ni shi yinggai yao yuanliang ta de.
 will^D you COP should^D will^D forgive he DE
 ‘Speaking of being obligated, I am obligated to forgive him.’
- d. 应该， 你是应该要原谅他的。
 ?Yinggai, ni shi yinggai yao yuanliang de.
 should^D you COP should^D will^D apologize DE
 ‘Speaking of being obligated, you are obligated to forgive him.’

The reasoning is, although the doubling of *yao* and *yinggai* entails moving out of a criterial position, doubling them in (36c-d) does not necessarily do so. Given we assume *yinggai* and *yao* form a new SO in (35), and the new-formed compound lacks the polysemantic nature since it only has the Obligation reading. In that case, there is no need

for *yinggai-yao* or *yao-yinggai* to raise to a T head to determine its meaning, thus doubling either one of them does not involve the movement from a criterial position, which consequently improves the grammaticality. A potential objection to this analysis could be that the doubling of *yao* or *yinggai* within *yinggai-yao* compound seems to violate the No Tampering Condition (Chomsky 2008: 138), according to which an SO formed by Merge cannot be tampered or deleted. In the case of *yinggai-yao*, however, it should be noted that the sequence remains unchanged throughout the course of narrow syntax, as shown in (36c-d). Thus, this objection may not fare well.

In addition, *yinggai-yao/yao-yinggai* seem to be exempted from the restriction of maximal modal verb occurrence. As I have address in 2.2, Chinese speakers would sense significant redundancies if more than two modal verbs are present. However, *yinggai-yao* can easily cooccur with an additional modal verb:

- (37) a. 你可能应该要道歉 (才行)。
 Ni kenengyinggai yao daoqian (caixing).
 you may^E should^D will^D apologize then-good
 ‘It might be the case that you are obligated to apologize.’
- b. 你要应该会开车 (才行)。
 Ni yao yinggai hui kaiche (caixing).
 you will^D should^D can^{Dy} drive then-good
 ‘You are obligated to be able to drive.’
- (38) a. 他可能要会开车 (才行)。
 ??Ta kenengyao hui kaiche (caixing).
 he may^E will^D will^{Dy} drive then-good
 ‘It might be the case that he is obligated to be able to drive.’
- b. 他可能应该肯吃苦 (才行)。
 ?*Ta kenengyinggai ken chi-ku (caixing).
 he may^E should^D will^{Dy} eat-bitter then-good

‘It might be the case that he is obligated to be willing to endure hardship.’

Other than the special case of *yinggai-yao*, the rest of the DMV-DyMV cooccurrences comply to the Deontic-Dynamic constraint uniformly, as illustrated in (31b-e). It should be highlighted that (31f-g) present a fact that *keyi* is in general not compatible with DyMVs, however the sequence *keyi-gan* and *keyi-ken* still appear to be more natural than *keyi-yao/hui/neng*. Differing from the cases of DMV-DMV, semantic implausibility seems to play a part in the case of (31f-g). For example, the paraphrased modal content of volition-*yao* and courage-*gan* under the modality of Permission is basically infelicitous:

- (39) a. 你想道歉的意图是被允许的。
#Ni xiang daoqian de yitu shi bei yunxu de.
you want apology DE willing COP PASS permit DE
‘Your volition of expressing apologies is permitted.’
- b. 你挑战自己的勇气是被允许的。
#Ni tiaozhan ziji de yongqi shi bei yunxu de.
you challenge self DE courage COP PASS permit DE
‘Your courage of challenging yourself is allowed.’

The semantic unsuitability illustrated in (39) conforms to the nature of Dynamic modality as Palmer (2001: 9) terms it as *internal to the individual* which thus needs no Permissions. The question is how to justify the fact that sentences in (31g) are better than those in (31f) despite that they are both imperfect with respect to semantic interpretations. Consider the repeated *keyi-gan* and *keyi-neng* sequences:

- (40) a. 你可以能拒绝他。
*Ni keyi neng jujue ta.

you can^D can^{Dy} refuse he

Intended reading: ‘You are allowed to be able to refuse him.’

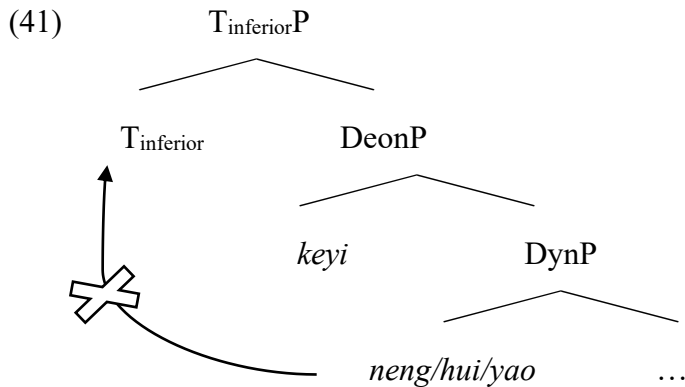
b. 你可以敢拒绝他。

?Ni keyi gan jujue ta.

you can^D dare^{Dy} refuse he

‘You are allowed to have the courage to refuse him.’

Polysemantic modal verbs like *neng* (including *hui* and *yao*) are argued to be mandatory to raise to a T head to value the {uModal} feature, and if my previous arguments claiming they are originated in the DynP below the DeonP is on track, the unacceptability of (40a) follows since *keyi* intervenes the raising of the lower DyMVs:



By contrast, monosemic *gan* and *ken* are not required to raise to T, and there will be no intervening effect.

Hu (2019) observes that the DyMVs following *keyi* can be negated, implying *keyi*-DyMV sequence is indeed possible, as illustrated in (42):

(42) a. 你可以不肯说实话。

Ni keyi bu-ken shuo shihua.

you can^D not-will^{Dy} say truth

‘You are allowed to be unwillingly to tell the truth.’

- b. 你可以不敢说实话。

Ni keyi bu-gan shuo shihua.
you can^D not-dare^{Dy} say truth

‘You are allowed to be too timid to tell the truth.’

It seems that if *gan* and *ken* are negated, the semantic implausibility might be remedied to certain extent, as it is reasonable for an individual to inactivate his/her internal conditioning factor related to the Volition (i.e., *ken*) and Courage (i.e., *gan*). In addition, given *keyi-gan/ken* sequence does not induce any syntactic mishap, the well-formedness of (42) is predictable.

By contrast, being negated does not render the sequence *keyi-neng/yao/hui* more acceptable, as they hinge on syntactic movement spanning *keyi*. Consider (43):

- (43) a. 你可以不能说实话。

*Ni keyi bu-neng shuo shihua.
you can^D not-can^{D-Dy} say truth

‘You are allowed not to tell the truth.’

- b. 你可以不要说实话。

*Ni keyi bu-tao shuo shihua.
you can^D not-can^D/will^{Dy} say truth

‘You are allowed to be unwillingly to tell the truth.’

- c. 你可以不会说实话。

*Ni keyi bu-hui shuo shihua.
you can^D not-will^D say truth

‘You are allowed not to be dispositional to tell the truth.’⁴⁹

Finally, let us turn to the case of DyMV-DyMV sequences. Based on the data illustrated in (32), we can bring about the following regulations: (i) the preceding DyMV must be interpreted as Deontic, while DyMVs interpreted as Dynamic can never precede a Deontic-indicating DyMV, conforming to the Deontic-Dynamic modal hierarchy, as illustrated in (32a-f); (ii) when both DyMVs indicate Dynamic meaning, polysemantic ones must precede monosemic ones, as in (32g-h). As the first regulation is pretty much predicted by many other writers, the second one requires more investigations. Observe (32g-h) (repeated as (44a-b)) again:

- (44) a. (只要经过心理准备) 他就能敢说出真相。
(Zhiyao jingguo xinlizhunbei), Ta jiu (*gan)
as-long-as through mental-preparation he then dare^{Dy}
neng gan shuochu zhenxiang.
can^{Dy/D} dare^{Dy} say-out truth
‘(As long as it is mentally prepared), he is able to have the courage to tell the truth.’
- b. (只要经过心理准备) 他就能肯说出真相。

⁴⁹ Note that *hui*, when indicating Ability, can follow *keyi* if negated:

- (i) 你可以不会弹钢琴。
Ni keyi buhui tan gangqin.
you can^D not-can^{Dy} play piano
‘You are allowed to be unable to play the piano.’

This case resembles *neng* with respect to the possibility of doubling (cf. 4.2.1), as *neng* can be doubled only if it denotes Ability. Therefore, I conclude that *hui* in (i) is introduced as a monosemic modal verb, since if it is polysemantic and eventually raises to T head for the purpose of determining the meaning, it would be possible for it to indicate both Ability and Disposition, contra the fact.

(Zhiyao jingguo xinlizhunbei), Ta jiu (*ken)
 as-long-as through mental-preparation he then will^{Dy}
 neng ken shuochu zhenxiang.
 can^{D/Dy} will^{Dy} say-out truth

‘(As long as it is mentally prepared), he is able to be willingly to tell the truth.’⁵⁰

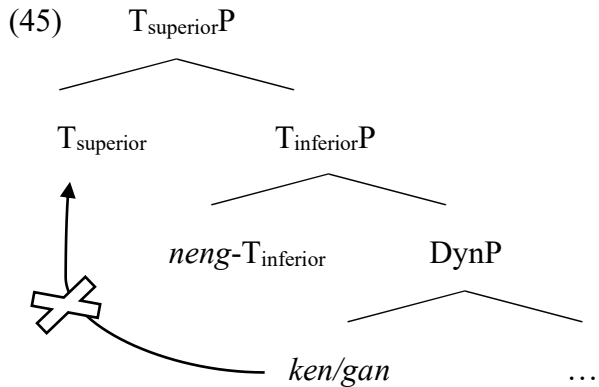
In (44), *neng* in such case has Ability interpretation and can be followed by either *ken* or *gan*⁵¹. What is of particular interest is that Ability-indicating *neng* can be further followed by Ability-indicating DyMVs. It is noteworthy that there is a rigid word order for such Dynamic-Dynamic sequence, that *neng* is not allowed to be preceded by *gan* or *ken*, as shown in (44). In effect, I argue this special case can also be attributed to the polysemantic/monosemic contrast between *neng* and *gan/ken*. That *neng* must raise to a T head to value the {uModal} feature, whereas *gan/ken* are not imposed with such requirement. As a result, a *ken/gan-neng* sequence would demand *ken/gan* to penetrate the intervener *neng* in violation to the Relativized Minimality:

⁵¹ *Neng* has Permission reading if the contextual presupposition is external to the individual:

- (i) (只要条件成熟) 他就能敢说出真相。

(Zhiyao jingguo xinlizhunbei), Ta jiu (*gan)
 as-long-as through mental-preparation he then dare^{Dy}
 neng gan shuochu zhenxiang.
 can^{Dy/D} dare^{Dy} say-out truth

‘(As long as the conditions are right), he is allowed (by the conditions) to have the courage to tell the truth.’



To recap this subsection, I conclude that there are two essential constraints on the multiple occurrences of RMVs. First, the Deontic-Dynamic order must be obtained; Second, Polysemantic RMVs must precede Monosemic RMVs. Any RMV sequence fails to satisfy these two constraints would be ruled out. Particularly, the reason why polysemantic modals cannot follow monosemic ones is that the latter would intervene the raising to T (T_{superior} or T_{inferior}) of the former, resulting in either the violation to the Relativized Minimality or the Full Interpretation. Illicit RMVs cooccurrence sequences are summarized in (46-48) and every token of them goes against at least one of the constraints.

(46) *Incorrect DMV-DMV sequence*

keyi-yinggai: Monosemic-Polysemantic

(47) *Incorrect DMV-DyMV sequence*

hui-yinggai/neng-yinggai/ken-yinggai/gan-yinggai: Dynamic-Deontic

keyi-hui/keyi-yao/keyi-neng: Monosemic-Polysemantic

(48) *Incorrect DyMV-DyMV sequence*

ken-hui/ken-yao/ken-neng; gan-hui/gan-yao/gan-neng: Monosemic-Polysemantic or Dynamic-Deontic

4.2.3 Being Negated by *Meiyou*

There is another asymmetric property presented by different sets of RMVs in the sphere of negation. It is well-known that Mandarin Chinese has two distinct negators: *bu* and *meiyou*. *Bu*, an irrealis negator, has received ample studies in early time (cf. Wang 1965, Chao 1968, Lü 1980, Li and Thompson 1981, Huang 1988) and is in general assumed to negate an unhappened event. On the other hand, *meiyou*, denotes the negation of an event existing in the realm of reality. Therefore, it is not surprising that modal verbs in Chinese should be exclusively negated by *bu*, since they denote irrealis content that is located in the domain of thoughts. That means, modal verbs are incompatible with *meiyou* by nature, as modal verbs in (49) can only be negated by *bu*:

- (49) a. 他不可能是个学生。
 Ta bu/(*meiyou) kenengshi ge xuesheng.
 he not/have-not may^E COP CL student
 ‘It is impossible that he is a student.’⁵²
- b. 他不应该放弃希望。
 Ta bu/(*meiyou) yinggai fangqi xiwang
 he not/have-not should^D give-up hope
 ‘He shouldn’t give up on hope.’
- c. 他不会弹钢琴。
 Ta bu/(*meiyou) hui tan gangqin.
 he not/have-not can^{Dy} play piano

⁵² (49a) may be good if *keneng* is understood as a noun meaning ‘possibility’ while *meiyou* must be interpreted as the negation of existence. The nominal status of the noun *keneng* is easy to capture, since it can be modified by another quantifying noun:

- (i) 他 没有一点可能会弹钢琴。
 Ta meiyou yidian keneng hui tan gangqin.
 he have-not bit possibility can^{Dy} play piano
 Lit. ‘There is no a little bit of possibility that he can play the piano.’

‘He can’t play the piano.’

- d. 我不要去他家。

Wo bu>(*meiyou) yao qu tajia.

I not/have-not will^{Dy} go he-house

‘I am not willingly to go to his house.’

However, there are three exceptions to the prohibition of *meiyou* negation: *neng*, *gan* and *ken*. Observe the following examples in which three of them are negated by the contracted form of *meiyou* (i.e., *mei*):

- (50) a. 他没能走出大山。

Ta mei neng zouchu dashan.

he have-not can^{Dy} walk-out great-mountain

‘He could not walk out of the great mountains.’

- b. 我没敢告诉他真相。

Wo mei gan gaosu ta zhenxiang.

I have-not dare^{Dy} tell he truth

‘I didn’t have the courage to tell him the truth.’

- c. 玛丽没肯答应约翰的求婚。

Mali mei ken daying Yuehan de qiuhun.

Mary have-not will^{Dy} agree John DE proposal

‘Mary wasn’t willingly to say yes to John’s proposal.’

At first glance, the selectional difference between *bu* and *mei* seems to account for the internal asymmetry between modal verbs. Hsieh (2001: 52-53) proposes that *mei* is exclusively used to negate dynamic event, while *bu* selects stative state; the term *dynamic* is a reference to a situation that its existence hinges on the ‘new input of energy’ (see Comrie 1976: 49 (cited by N. Li 2016: 62)). In a very similar way, J-W. Lin (2003) claims that *mei* is

required to select an event as its complement, whereas *bu* selects a stative situation.

Note that as illustrated in (50a-c), modals that can be negated by *mei* are all DyMVs indicating strict Dynamic meaning. *Neng*, as discussed in the previous subsections, is a polysemantic modal verb. However, when negated by *mei*, it can no longer have a reference to the Permission content, as (51) is not grammatical with a Permission *neng*:

- (51) 这里没能抽烟。
*Zheli mei neng chouyan.
here have-not can^D smoke
'It was not allowed to smoke here.'

In this case, the selectional condition of *mei* seems to capture the distinctions shown in (49) and (50a-b) as modal verbs negated by *mei* are all Dynamics. Yet, the ungrammaticality of (49c-d) raises a question to this selection-based generalization. Since Ability/Volition-indicating DyMVs like *hui* and *yao* are also incompatible with *mei*, which suggests that the specific modal meaning of whatever is negated by *mei* is not essential.

Alternatively, N. Li (2016: footnote 31) acknowledges the *mei*-negated *neng* is somehow special as most of the modal verbs can only be negated by *bu*. N. Li thus argues that *neng* in the case of (50a) in fact describes an episodic event rather than modal content. Therefore, *neng* in such situation introduces eventuality argument as '*he failed to walk out of the great mountains.*' and might be treated as a verb. I basically agree with Li in assuming that *neng* in (50a) is related to an episodic event, but her non-modal analysis for *mei-neng* may not be extendable to the cases of *mei-gan* and *mei-ken*, as they cannot be interpreted as episodic event. Consider the contrasts demonstrated by (52) and (53).

- (52) 我亲眼见到他没能走出大山。
Wo qinyan jiandao ta mei neng zouchu
dashan.
I own-eye witness he have-not can^{Dy} walk-out

- mountain
 ‘I saw it with my own eyes that he couldn’t walk out of the mountain.’
- (53) a. 我亲眼见到他没敢走出大山。
 #Wo qinyan jiandao ta mei gan zouchu dashan.
 I own-eye witness he have-not dare^{Dy} walk-out mountain
 ‘I saw it with my own eyes he didn’t have the courage to walk out of the mountain.’
- b. 我亲眼见到他没肯走出大山。
 #Wo qinyan jiandao ta mei ken zouchu dashan.
 I own-eye witness he have-not will^{Dy} walk-out mountain
 ‘I saw it with my own eyes he wasn’t willingly to walk out of the mountain.’

As demonstrated in (53a-b), *mei*-negated *gan* and *ken* cannot occur in the complement of the direct perception verb *jiandao* ‘to see, to witness’ despite there is no such incompatibility in the case of *mei-neng*, in contrast to the robust instance of *mei-neng* in (52). A straightforward observation comes off naturally that *mei-neng* is subject to Davidsonian events (cf. Davidson 1967), since the action of ‘walking out of the mountain’ is directly observable and can be located in the space-time coordinates (see Fernald 2000: 24). In other words, (52) can be paraphrased as ‘*he intended to walk out of the mountains; he wandered in the mountains for a certain amount of time; he eventually failed.*’ On the other hand, the infelicity of (53a-b) can be resorted to the paradoxical requirements of Davidsonian event and irrealis modality that *jiandao* must take a directly perceivable event as complement, whereas *mei-gan* and *mei-ken* express modal contents which cannot be located in the space-time coordinates. In fact, (53a-b) cannot be paraphrased in the manner of (52) since they indicate a case entailing the presupposition of ‘*he didn’t commence walking out of the*

mountains in the first place’, which amounts to saying that *mei-gan* and *mei-ken* should be analyzed as Kimian states (cf. Kim 1969 and Maienborn 2005).

The distinction between *mei-neng* and *mei-gan/mei-ken* can be further evidenced by the fact that only *mei-neng* can be modified by External/Internal locative expressions (see Maienborn 2005: 288)⁵³:

- (54) a. 他没能 在山里 抓老虎。
 Ta mei neng zai shanli zhua laohu.
 he have-not can^{Dy} at mountain catch tiger
 ‘He could not catch the tiger in the mountains.’
- b. 他没敢 在山里 抓老虎。
 ??Ta mei gan zai shanli zhua laohu.
 he have-not dare^{Dy} at mountain catch tiger
 ‘He didn’t have the courage to catch the tiger in the mountains.’
- c. 他没肯 在山里 抓老虎。
 ??Ta mei ken zai shanli zhua laohu.
 he have-not will^{Dy} at mountain catch tiger
 ‘He wasn’t willingly to catch the tiger in the mountains.’

(54a-c) clearly denote that though *mei-neng* may be accompanied by a specific location, *mei-ken* and *mei-gan*, on the other hand, are incompatible with locative expressions. Following Maienborn (2005: 288) who claims that External/Internal locative modifiers are related to the VP’s (*zhua laohu* ‘catch the tiger’) underlying eventuality argument, the contrast illustrated in (54) suggests that *mei-gan* and *mei-kan*, unlike *mei-neng*, should not be taken to be Davidsonian event. As a result, the episodic event analysis N. Li (2016)

⁵³ Besides External and Internal locative modifier, Maienborn also claims that there is another Frame-setting modifier. However, she claims that Frame-setting modifiers are irrelevant to eventuality arguments hence cannot be used as eventuality diagnostics.

proposes for the case of *mei-neng* seems to need some augments.

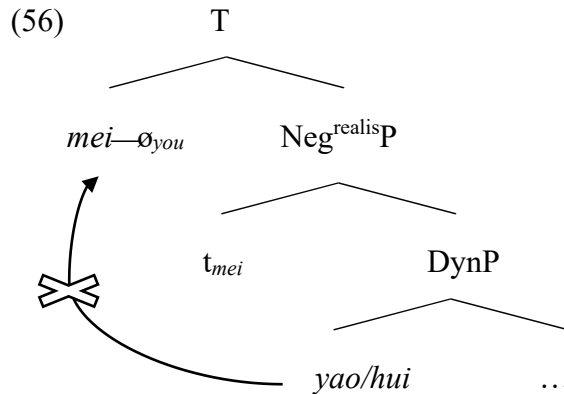
To make an interim summary, if N. Li's (2016) analysis, which assumes *mei-neng* to be related to an episodic event instead of dynamic modality, is on the right track, the remaining question is how can one justify the correct instances of *mei-ken* and *mei-gan*, given that they not only differ from *mei-neng* in denoting Kimian state, but also other dynamic modals cannot be negated by *mei* (recall *mei* is argued to be specialized in negating dynamic situations).

To answer this very question, I would like to propose a morpho-syntactic analysis that instead of analyzing *mei-gan* and *mei-ken* as exceptions licensed by particular syntactic operations, I propose that it is actually *mei-hui* and *mei-yao* being ruled out by the GHC (cf. 2.2). First, as exhibited in (55), there is no semantic implausibility when Ability-*hui* or Volition-*yao* is negated in the realis context, suggesting *mei-hui* and *mei-yao* are ill-formed due to formal factors:

- (55) a. 我那时不具备弹钢琴的能力。
 Wo nashi bu-jubei tan gangqin de nengli.
 I that-time not-possess play piano DE ability
 'Back then I didn't have the ability to play the piano.'
- b. 我那时不具备弹钢琴的意愿。
 Wo nashi bu-jubei tan gangqin de yiyuan.
 I that-time not-possess play piano DE volition
 'Back then I didn't have the volition to play the piano.'

In turn, I argue that the asymmetric properties pertaining to the contrast of polysemantic/monosemic again play an important role in the case of *mei*-negation. In short, *hui* and *yao* are polysemantic modal verbs thus must raise to T head to have the uninterpretable {uModal} feature valued. Following N. Li (2016: 48) who argues the constituent in T is \emptyset_{you} which indicates non-future tenses and *mei*, the head of NegP under TP, must undergo obligatory movement to \emptyset_{you} to ensure the formation of the amalgam *meiyou*.

Note that despite the pronunciation of *you* is optional, T is still occupied by another lexical word, i.e., *mei* (has the meaning of ‘to sink’ as a lexical verb). Therefore, if *hui* or *yao* raises to T as well, the T head would end up being occupied by more than one lexical word, violating the GHC:



As for which T, inferior or superior, is the one adjoined by *mei*, I argue it is T_{inferior} . As shown in (56a-b), *mei* must follow EMVs instead of the other way around:

- (56) a. 他应该没吃饭。
 Ta (*mei) yinggai mei chifan.
 he have-not may^E have-not eat-meal
 ‘It is possible that he hasn’t had a meal.’
- b. 他可能没吃饭。
 Ta (*mei) keneng mei chifan.
 he have-not may^E have-not eat-meal
 ‘It is possible that he hasn’t had a meal.’

It is argued in Chapter 3 that *yinggai* obligatorily raises to T_{superior} while *keneng* can stay at its original position taking a truth condition ($T_{\text{inferior}}P$) as complement. The sequential order illustrated in (56) suggests that *mei* can only be adjoined to T_{inferior} . Therefore, the assumption

that *mei* moves directly to T_{superior} to circumvent the ‘too heavy head’ problem seems to have slim possibility, let alone such movement violates the Relativized Minimality because T_{inferior} is the closer potential landing site.

By contrast, *ken* and *gan* are monosemic hence need not to raise to a T head for the purpose of feature-valuation. And *mei-gan/mei-ken* are merely the consequence of *mei* selecting a dynamic situation as Hsieh (2001) suggests.

To sum up, in this subsection I first examine Li’s (2016) analysis of the exception of *mei-neng* that *neng* can be negated by *mei* because it conveys a non-modal episodic event. However, though offers an elegant account for the puzzle of *mei-neng*, this analysis falls short with respect to the legitimacy of *mei-gan* and *mei-ken* which, as I have suggested, are not related to episodic events. I thus propose that dynamic modals are by nature negatable by *mei* and the incorrect instances like *mei-yao* or *mei-hui* in fact again mirror the polysemantic/monosemic asymmetry within DyMVs: *Yao* and *hui* are obligated to raise to T (T_{inferior} in this case), which is previously adjoined by *mei*, for the feature-valuation purpose. Consequently, with two lexical words squeezed into one head slot, the GHC violation is inevitable.

4.3 Summary of the Chapter

In this Chapter, I have focused on the understudied asymmetric properties of Root modal verbs. Given the conventional Deontic-Dynamic dichotomy does not suffice to explain some of the intriguing linguistic facts shown by Chinese RMVs, I again propose an analysis on the basis of polysemantic-monosemic contrast in analogy to what has been done in Chapter 3.

Specifically, I conclude that the difference with regard to the licensing of RMV-doubling reflects whether a RMV is in a criterial position or not. The doubling of polysemantic RMVs like *yinggai*, *yao*, *hui*, and *neng* are much less acceptable in contrast to monosemic *keyi*, *gan* and *ken*. Since doubling operation entails genuine movement, as argued in Cheng and Vincente (2013), and movement from a criterial position is not allowed (cf. Rizzi 2016).

Besides the doubling issue, the constraint of multiple RMV occurrence also implicates there is an asymmetry between polysemantic and monosemic. That a licit RMV occurrence token is in fact subject to two sequential restrictions: (i) Deontic-Dynamic; (ii) Polysemantic-Monosemic. A reversed Monosemic-Polysemantic order would trigger the violation to the Relativized Minimality as the monosemic RMV in question must raise to a position higher than a T head that is previously adjoined by a polysemantic RMV, causing intervening effect.

Finally, I take the liberty to generalize the possibility of *mei*-negated DyMVs. Among which, *neng*, *gan* and *ken* can be negated by *mei*, whereas *hui* and *yao* cannot despite that all of them denote dynamic meaning. Following the pioneer work of Li (2016) in which *mei-neng* is argued to be describing an episodic event instead of modal content, I propose *mei-ken* and *mei-gan* are not related to eventuality argument, and being dynamic modal verbs they are inherently negatable by *mei* (as suggested by Hsieh 2001 and J-W. Lin 2003). Crucially, the fact that *mei-yao* and *mei-hui* are unacceptable can again be derived from the polysemantic/monosemic asymmetry, that in contrast to monosemic *gan* and *ken*, *hui* and *yao* must raise to T_{inferior} aiming feature-valuation. However, as proposed in Li (2016), *mei* is a negator that undergoes mandatory movement to $T_{\text{(inferior)}}$ as well. Accordingly, there will be two lexical words squeezed into one T head slot, thus the ungrammaticality of *mei-hui* and *mei-yao* comes from the violation to the GHC regulated by Harwood (2014).

5. Conclusion

In this dissertation, I have presented arguments for the necessity of distinguishing Polysemantic modal verbs from Monosemic modal verbs, as they demonstrate quite distinct syntactic behaviors. As emphasized throughout the present work, the core difference is that polysemantic modal verbs are imposed with the obligation to enter into an Agree relation with T (either superior or inferior) to decide their specific meaning by valuing {uModal} feature they bear following the proposal of Harwood (2014) according to which English modal verbs raise to T in the form of Head-to-Head movement to value the {uT} feature. By contrast, monosemic ones would have their meaning specified before entering the derivation, hence no need to form a Probe-Goal relation with T. One of the crucial results of this proposal is that the freezing effect formulated in Rizzi (2016) hinders any further categorial movement of polysemantic modal verbs targeting the left periphery, whereas monosemic modal verbs is insensitive to this restriction.

In Chapter 3, I have explicitly shown that the polysemantic vs. monosemic distinction successfully regularizes the behavioral difference between *keneng* ‘may’ and *yinggai* ‘may’. The fact that *yinggai*, being polysemantic by nature, is stranded in the proximity of T by the freezing effect seems to correctly predict that *yinggai*, but not *keneng*, (i) cannot precede the subject; (ii) cannot be rightwards dislocated; (iii) cannot co-occur with interrogative *wh*-phrases; (iv) cannot co-occur with yes-no interrogatives. In addition, the marginal issues with respect to the sequential order of EMVs as well as the cooccurrence of EMV and epistemic adverbs can also be derived from the polysemantic vs. monosemic distinction noted above.

In Chapter 4, in a very similar fashion, the asymmetrical properties displayed by distinct RMVs can be deduced from the polysemantic vs. monosemic contrasts. As to the phenomena like Focus-driven doubling, multiple occurrences of RMVs and *meiyou*-negation, I have argued that the arguments presented in this Chapter can be derived from whether or not the requirement of the Agree relation with T is implemented. Polysemantic RMV like *yao* is generally prohibited from being Focus-driven doubled or negated by *meiyou*, while monosemic RMV like *ken* is not subject to such constraints. Furthermore, I also presented a

more refined sequential order condition regarding the multiple occurrences of RMVs with the assistance of the polysemantic vs. monosemic distinction. In effect, in addition to the Deontic-Dynamic order, the rigid Polysemantic-Monosemic order must also be maintained in the sense of Relativized Minimality.

6. Remaining issues and cross-linguistic scrutiny

6.1 The Valuation of Non-formal Feature

In this section, I explore the mechanism of Agree in the process of disambiguation, as it is argued in the present dissertation that polysemantic modal verbs in Mandarin Chinese acquires the intended meaning via entering an Agree relation with an T head. It is manifested that my approach, according to which the valuation of the unvalued {uModal} feature borne by polysemantic modal verbs is a proper way to render legit outputs, is robust both theoretically and empirically.

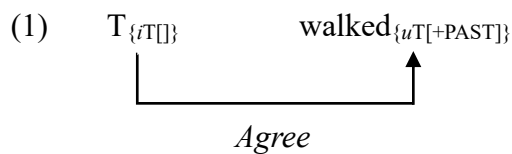
6.1.1 Unvalued but Interpretable

It should be noted that Agree is originally formulated to be an operation void of semantic impact (Chomsky 2000, 2001). The key factor that initializes Agree relation, i.e., unvalued feature on Probe, is also claimed to be lacking semantic values (see Chomsky 2001: 5). My proposal that exploits the valuation of the semantic {uModal} features thus may seem to be at odds with the formal nature of Agree. In addition, it is also counterintuitive to assume each polysemantic modal lexical item carries an unvalued/uninterpretable {Modal} feature, as it would be natural to assume that the number feature of a nominal item is valued in the lexicon (cf. pluralia tantum nouns like *trousers*). In the remainder of this subsection, I discuss the nature of valuation/interpretability together with the legitimacy of the valuation of a feature like {Modal} in the sense of the division of valuation and interpretability (Pesetsky and Torrego 2007).

The notion of valuation and interpretability is somehow conflated in the traditional Agree system, as Chomsky (2001: 5) proposes that a feature is unvalued if and only if it is uninterpretable. This biconditional in fact mirrors a fashion to enable the narrow syntax to detect the C-I illegitimate features and mark/delete them before the derivation is fed to semantic components. In effect, the valuation operation in Agree takes the responsibility to ensure that no C-I offending feature remains after narrow syntax. Despite disputations,

interpretability is often assumed to refer to the contributions to semantic interpretation⁵⁴. As mentioned above, valuation morphologically encodes the interpretability under the biconditional. Pesetsky and Torrego (2007), however, present a departure from Chomsky’s Agree system in assuming two additional feature combinations: (i) unvalued/interpretable; (ii) valued/uninterpretable. A significant theoretical intent of their suggestion is that narrow syntax is unable to discern interpretability, meaning a Probe must at least contain a feature that is unvalued.

Pesetsky and Torrego (2007: 270) demonstrate an exemplification in which an unvalued/interpretable feature functions as a Probe. In a nutshell, based on the fact that T head is assigned with tense interpretation while tense morphology is taken on by the finite verb in languages like English, T bears an unvalued/interpretable $\{iT[\]\}$ (bracket=valuation), while a finite verb such as *walked* bears a valued/uninterpretable $\{uT[+PAST]\}$. The Agree relation can be depicted in the following diagram:



Although not specified in the contexts of T-finite verb Agree with regard to whether the valuation of T’s unvalued feature has any semantic consequence, Pesetsky and Torrego’s (2007) Agree system dealing with the *wh*-construction explicitly suggests that valuation of the unvalued feature on Probe affect the semantic interpretation. In the discussion of an interrogative CP, for example, their approach includes a Probe-Goal relation between $C_{\{iQ[\]\}}$ and a $wh_{\{uQ[+INTERROG]\}}$. Crucially, C receives the value of [Interrog] from its Goal would result in a clause like “*what did Mary buy?*”. The major difference between interrogative CPs and declarative CPs involving *wh*-phrases may be reduced to whether C is properly

⁵⁴ For example, it is not entirely clear why a valued ϕ -feature is C-I offending on T but not on a noun, though it is widely accepted that such feature should be deleted before entering CI interface (see Epstein, Kitahara and Seely 2015: Cpt 5 for detailed discussion).

valued as interpretable [Interrog]. In other words, valuation may also affect semantic interpretation. It is then presumable that the unvalued/interpretable tense feature of T illustrated in (1) may have the following implications:

(2) *Unvalued/Interpretable Tense Feature*

Such feature is readable in C-I interface and it affect the semantic interpretation, whereas the specific semantic content is determined by receiving values from its Goal.

Thus, I do not consider Agree/valuation to be a pure morphology-bound operation in narrow syntax. As I will return to this issue in 6.2 where I will offer empirical data to show that valuation has semantic effects.

Following the practice of Pesetsky and Torrego, I argue the {Modal} carried by polysemantic modal verbs fall in the same pattern, namely it may have the form of {iModal_[1]}. Modal verbs, polysemantic or monosemic, inclusively bear interpretable {Modal} feature, indicating that they deliver the information that the notion of modality is involved to semantic components. Nonetheless, polysemantic modals are void of values due to the fact that their meaning is not determined in the lexicon. Thus, by initializing Agree, polysemantic modals may go through the “modality typing” process in analogy to the clause typing discussed in Pesetsky and Torrego (2007: 272) with respect to the *C-wh* Agree.

One might ask what would happen if a polysemantic modal verb fails to receive value from its Goal. Note that in previous Chapters I adopt the standard valuation=interpretation biconditional, which dictates that an unvalued feature would always cause C-I crash. However, in the current discussion of the *unvalued but interpretable* feature, it may not be a C-I offending since it is now readable in such interface. If on the track, this feature characterization may severely challenge the central argument of this dissertation which is contingent upon the requirement for polysemantic modal verbs to value/remove the uninterpretable/unvalued {Modal} feature. Note that Pesetsky and Torrego (2007) assume T bear unvalued tense feature because it activates the Probe status of the former, and, I believe, if T does not receive this value, the derivation may still be convergent at the price of yielding

semantic gibberish. Specifically, with the tense feature of T being interpretable, C-I interface would know the derivation has temporal reference even if it stays unvalued throughout the process. Importantly, the final output may end up in the interpretation like: **he to walked* (recall the finite verb bears the past tense morphology, but tense distinctions hinge on T). The reason is simple: T fails to acquire the value of *time* from its Goal, thus a vacuous temporal reference, i.e., non-finite contexts.

In the contexts of polysemantic modal verbs, the vacancy of values would likewise lead to semantic anomaly. For example, say there is a modal verb sequence *yao-hui*, if the $\{iModal\}$ of *yao* does not receive a value, nothing would hinder *yao* being interpreted as a Volition modal verb. Consequently, a semantic gibberish is inevitable:

- (3) 你要会开车。
 *Ni yao-hui kaiche.
 you will^{Dy}-can^{Dy} drive
 ‘You are willing to have the courage to drive.’

The remedy here is to assign a specific value to the $\{iModal_{[1]}\}$ of *yao*, which types it as an Obligation modal verb. If this reasoning is correct, the feature valuation clearly affects the semantic interpretation.

6.1.2 Case Studies on Interpretation-affecting Valuation

In this subsection, I show a number of researches that utilize the notion of Agree/valuation to account for linguistic phenomena entailing the properties of interpretation. In a word, on the basis of the arguments of those researches, receiving values from valued feature does seem to have semantic effects.

6.1.2.1 {-focus} on C

Agreement, as Miyagawa (2010: 6-7) points out, seems to be superfluous, since it redundantly marks the information on two distinct locations. The deletion of uninterpretable feature after valuation also raises the question why is it necessary for the computational system to insert a feature that makes no sense to semantics and eventually delete it. To solve this puzzle, Miyagawa proposes an idea that the purpose of agreement is to construct functional relations which enhance the expressiveness of human languages.

In addition to the uninterpretable ϕ -feature, he also presumes the {-focus} feature on C (which may be inherited by T). The Agree relation between {-focus}-bearing C and the focused element may then contribute to the information structure of Focus. If there is no focused element in the given structure, {-focus} would not enter into an Agree relation which simply requires the specifier of its bearer to be filled. Thus, the presence/absence of {-focus} agreement would alter the interpretation of the information structure. To exemplify this idea, Miyagawa (2010: 73) claims that the nominative object in Japanese with wide scope arguably participate in an Agree relation with {-focus} feature on T:

(4) 太郎はバスケットボールができる。

- a. Taroo-wa basukettobooru-ga deki-ru.
 Taroo-TOP basketball-NOM can-PRES
 ‘Taroo can play basketball.’

- b. [TP OBJ_{NOM}{+focus} T’[T{-focus}]]



Agree

Note that such {focus} agreement is absent when the object is marked accusative. Here, Agree distinctly plays a part in semantic interpretation.

6.1.2.2 Specifying Quantificational Force of Wh-Operators

In Saito (2017), it is argued that *wh*-phrases in Japanese are operators with unspecified quantificational force. This proposal conflicts with the more traditional view that treats Japanese *wh*-phrases as variables to be bound. The examples in (5) do seem to suggest that those *wh*-phrases are subject to a quantificational operator-variable relation:

(5) 太郎は誰がそれを食べたか知っている。(Extracted from Saito 2017: 2)

- a. Taroo-wa [[dare-ga sore-o tabeta] ka] sitteiru.
Taroo-TOP who-NOM it-ACC ate Q know
'Taroo knows who ate it.'

誰が書いた本も面白い。

- b. [[[Dare-ga kaita] hon] mo] omosiroi.
who-NOM wrote book also interesting
'For every x, x a person, the book that x wrote is interesting.'

Dare in (5a) is interpreted as *wh*-construal on one hand, *dare* in (5b) is interpreted with universal quantification. Through this comparison, it seems plausible to conclude that it is the particle *mo* in (5b) that acts as the operator which unselectively binds *dare*, the indeterminate pronoun (see also Nishigauchi 1990).

Recall that *wh*-phrases in Chinese are quite similar to those of Japanese in being able to be interpreted as *wh*-construal as well as indeterminate pronouns. However, Takita, Fuji and Yang (2007) propose that there is a major different between Chinese and Japanese that *wh*-phrases do not move in Chinese but in Japanese. This proposal is very much in line with Tsai (1999) which claims that Chinese allows for external merger of $Op_{[Q]}$ to the scope position, whereas such operator originates in the vicinity of Japanese *wh*-phrases and subsequently moves to the left periphery, despite that *wh*-phrases in both languages are subject to the unselective binding of $Op_{[Q]}$.

The unselective-binding analysis exhibited above, however, is questioned in Saito (2017:

12). A very evident piece of evidence is that Japanese *wh*-phrases fail to emerge in the so-called bare conditionals, as illustrated in (6).

(6) 誰が来れば、誰が食事を取れる。

*Dare-ga kureba, dare-ga syokuji-o toreru.
 who-NOM come-if who-NOM meal-ACC take-can
 ‘For every x, x a person, if x comes, x can grab a bite.’

Note that conditionals inherently have universal quantificational force, assuming such operators cannot merge at sentential level in Japanese is not helpful. The ungrammaticality of (6) also raises a question to the *wh*-as-variable hypothesis. Specifically, why *dare* in (6) cannot be unselectively bound in the absence of a quantificational particle if it is genuinely a variable. Saito (2017: 16) further points out particles may occur without a pairing *wh*-phrases, whereas a *wh*-phrase requires the presence of a particle. Observe the contrast illustrated below:

(7) 太郎は花子は何を食べたか知っている。(Extracted from Saito 2017: 16)

a. Taroo-wa [[Hanako-ga wani-o tabeta] ka] sitteiru.
 Taroo-TOP Hanako-NOM alligator-ACC ate Q know
 ‘Taroo knows if Hanako ate alligator meat.’

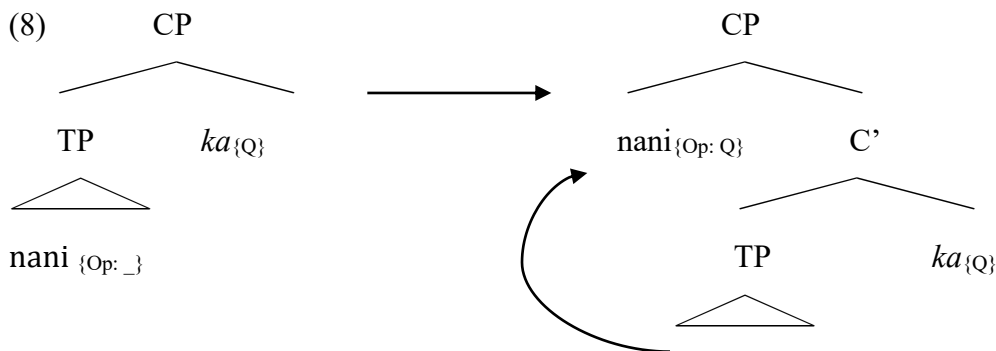
太郎は花子は何を食べたと思っている。

b. *Taroo-wa [[Hanako-ga nani-o tabeta] to] omotteiru.
 Taroo-TOP Hanako-NOM what-ACC ate C think

As suggested in the comparison between (7a) and (7b), the particle *ka* can indicate that (7a) is a yes-no question where no *wh*-phrase is present. On the contrary, a *wh*-phrase *nani* in (7b) cannot receive an interpretation without a particle. Therefore, it seems to be the case that the quantificational force of a *wh*-phrase is determined by a quantificational particle

instead of the other way around.

Saito (2017) thus makes the proposal that *wh*-phrases in Japanese are operators with unspecified quantificational force which would enter into an Agree relation with a particle in the manner of covert movement. Let us take an instance of *wh*-construal to demonstrate the Agree mechanism he proposes:



As sketched in (8), the unspecified quantificational force of *nani* is encoded as an unvalued operator feature which lacks lexical content. To activate *nani*'s Probe status, it must undergo covert movement to a position where it can c-command the particle *ka* (the Goal) which is specified with quantificational force.

It naturally follows that (6) is unacceptable due to vacuous quantification, as there is no particle providing specified quantificational force. Likewise, the *wh*-island effects can be properly explained under the Agree system shown above, that the further movement of *wh*-phrase would end up in the violation of criterial condition that has readily been argued to be the key factor stopping polysemantic modal verbs in Chinese from moving out the position of feature valuation in the previous chapters.

Saito's Agree-based approach manifests a situation where the consequence of valuation feeds into semantic components, as he writes in the ending remarks. Feature valuation may then have a greater applicability as it affects the semantic interpretation, which is exactly what I have argued in this thesis that the contrast of polysemantic vs. monosemic, two semantic notions, gives rise to a number of behavioral differences among Chinese modal verbs. The valuation of {Modal} may also be seen as the specification of modality force,

epistemic, deontic or dynamic.

6.1.2.3 Object Honorifics Result from Agree

In this subsection, I will lay focus on the object honorifics (OH) of Japanese. As Ikawa (2021) suggests that the feature valuation does indeed affect semantics, based on the observations on OH. An OH example is given in (9):

(9) 太郎は社長をお誘いした。

Taroo-wa syatyoo-o o-saso-i-si-ta.

Taroo-TOP CEO-ACC HON.invite-do-PAST

‘Taroo invited the CEO.’

Note that although the predicate is marked with the honorific prefix *o* or *go*, the honoree must be the object. Ikawa points out that OH is doomed to be infelicitous if the subject has a higher status than the object: as shown in (10), in which the subject is *emperor* while the object is *PM*, OH expression cannot be acceptable:

(10) 皇帝陛下は総理をお助けした。

#Kooteiheika-wa soori-o o-tasuke-si-ta.

emperor-TOP PM-ACC HON.help-do-PAST

‘The emperor helped the prime minister.’

Additionally, the distribution of the honoree in OH seems to be inconsistent. As Ikawa (2021: 231), for example, exhibits that the honoree must be the indirect object (IO) in a ditransitive structure that the direct object (DO) cannot be the referent of the honorific. Consider the following ditransitive sentences:

(11) 花子が先生に太郎をご紹介した。(Extracted from Ikawa 2021: 231)

- a. Hanako-ga sensei-ni Taroo-o go-syokai-si-ta.
Hanako-NOM professor-DAT Taroo-ACC HON.introduce-do-PAST
'Hanako introduced Taroo to the professor.'

花子が太郎に先生をご紹介した。

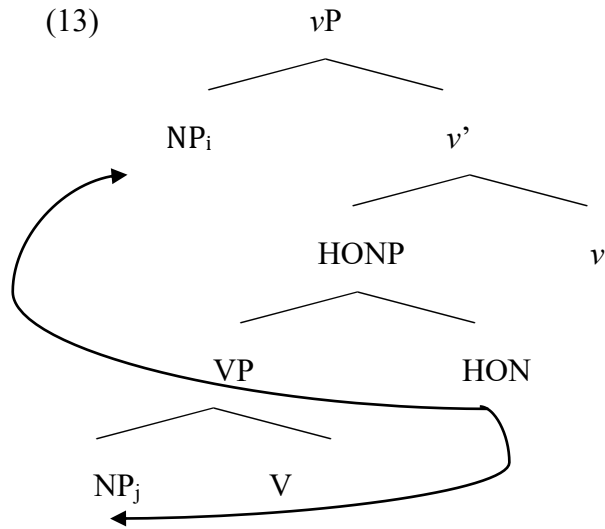
- b. #Hanako-ga Taroo-ni sensei-o go-syokai-si-ta.
Hanako-NOM Taroo-DAT professor-ACC HON.introduce-do-PAST
'Hanako introduced the professor to Taroo.'

Moreover, OH is sensitive to the phasehood as well. Shown in (12), where the predicate and the honoree are not in the same phase, infelicity emerges even if the honoree is the only animate NP in such clause.

(12) 太郎は先生がお綺麗だと思ひした。(Extracted from Ikawa 2021: 234)

- Taroo-wa [sensei-ga o-kirei-da to] o-omoi-si-ta.
Taroo-TOP professor-NOM beautiful C HON.think-do-PAST
'Taroo thought the professor was beautiful.'

On the basis of those behavioral properties shown above, Ikawa proposes that Agree is entailed in the determination of honoree in OH. According to her, the object honoree, together with the subject, in OH enters into an Agree relation with a distinct functional head HON that contains two Probes, as illustrated in the following diagram:



The two probes embedded in HON scan both upward and downward. The upward searching will find the subject at SPEC, vP while the downward searching will find the highest animate object NP. If it is true that Agree chooses the honoree, the sensitivity to locality constraints illustrated in (11-12) is now explicable. As the Probe-Goal linking is generally assumed to be a rather local relation (Chomsky 2000, 2001).

The feature involved in this bi-directional Agree is assumed to be the index feature rather than an honorific-encoding {HON} feature. The index feature is also argued to be *interpretable but unvalued*, as we have witnessed in 6.1.1 that the association of interpretability and valuation is nullified in Pesetsky and Torrego (2007). After valuation, the probes in HON may have the form shown in (14):

(14) HON{ $F_{1[i]}$, $F_{2[j]}$ }

At this point, HON head can send honorific interpretation to semantics, with specification of *who is the honoree*, because HON is the semantic predicate *honor* which takes the two Goals as arguments in (15). In other words, HON, the Probe, creates a semantic linking between its two Goals.

(15) *Speaker* and NP_i honor NP_j

The infelicity of (10) may receive a plausible reasoning if Ikawa's proposal is on the right track, as the output of Agree would lead to the following interpretation, which is infeasible since the emperor has a much higher status than the prime minister:

(16) *Speaker* and NP_k honor NP_j

=Speaker and the emperor honor the prime minister.

If the analysis that Agree can send the result of valuation to semantic predicate and this predicate can in turn select its arguments via the feature valuation is correct, Agree might not be an operation devoid of semantic effects as it is often assumed to be.

6.2 Polysemantic vs. Monosemic: crosslinguistic investigations

In this section, I explore the possibility that the disambiguation of a polysemantic lexical items may have syntactic reflections is not a specific trait that can only be observed on Chinese modal verbs. In fact, I show below that the polysemantic vs. monosemic contrast may account for several linguistic phenomena in a variety of languages.

6.2.1 English modal verbs

Notably, none of the modal verbs in English is monosemic, including the marginal *need* and *dare*, as illustrated below:

(17) MAY: be possible/ be allowed to...

CAN: be able to/ be allowed to/ be possible...

MUST: be obliged to/ be necessary...

OUGHT TO: be obliged to/ be possible...

WILL: future tense/ be possible/ be willing to...

SHALL: future tense/ be possible/ be willing to...

NEED: be obliged to/ be necessary...

DARE: be brave enough to/ to provoke...

Therefore, another theoretical account for Harwood's (2014) Agree-based approach (see Chapter 2) may emerge. That modal verbs in English would acquire their intended meaning through the valuation of their {uTense} feature. Recall that *keneng* in Chinese is an epistemic modal verb that has only one meaning, thus no Agree relation is required. By contrast, *may* in English is polysemantic, suggesting an obligatory Agree relation. The necessity of Agree relation may provide an account for the contrast between *keneng* and *may* as illustrated in (18), in which they both indicate possibility:

(18) 可能他去了东京。

- a. Keneng ta qu-le Dongjing.
 may^E he go-ASP Tokyo
 'It is possible that he went to Tokyo.'
- b. *May he have gone to Tokyo.

English *may*, as in (18b), cannot occur before subject in declarative contexts. On the other hand, Chinese *keneng* causes no problem in such position, as I have thoroughly discussed in Chapter 3. Under the analysis of the current work, such contrast can be resorted to the appearance of freezing effects. Specifically, *may*, a polysemantic modal verb, would have its {uTense} feature valued after adjoining to T, which is now a criterial position. The ban on its further movement to the edge of the clause is expected. One may ask the question why a modal verb can appear in the pre-subject position in Subject Auxiliary Inversions (SAI) contexts, I will turn to this topic in 6.2.2.1

Another difference between English and Chinese is that only the latter allows for multiple occurrences of modal verbs, whereas the auxiliary stack in English involves the sequence of modal-aspect items. Consider (19-20):

(19) 他应该肯来。

Ta yinggai ken lai.
he may^E will^{Dy} come

‘It is probable that he is willing to come.’

- (20) a. *He should can come.
 b. He may have come.
 c. He would be there.

Since English modal verbs are unitarily polysemantic, they are always imposed with the requirement to enter into an Agree relation with T. However, there is no attested evidence that supports a stipulation assuming two T heads in English. If there are two modal verbs occur in one clause simultaneously, one of them would face the predicament that there is no additional Goal that carries the corresponding valued feature. Therefore, the fact that English modal verbs must be finite (see Pollock 1989) may factually reflect the one and only one Agree relation between T and a modal verb, as multiple occurrences of modal verbs would always mark the second modal verb as infinite (e.g., *can* in (20a)). Contrarily, given *have* and *be* have only one meaning respectively when functioning as aspectual modal verb, they are not required to enter into the Agree relation with T. As a result, they can occur with a finite modal verb.

6.2.2.1 SAI and Criterial freezing

SAI occurs in various environments such as, for examples, interrogatives, wishes and curses, and negative frontings, as shown in (21-23). Importantly, in SAI the modal verbs appear before the subject, which is predicted to be ungrammatical under my analysis in 6.2.1, because it violates the constraint of a criterial position. In this subsection, I argue SAI does not challenge my proposal concerning English modal verbs since it may involve movement, but that is not a movement bound to criterial position.

(21) *Interrogatives*

Can you make some Carbonara?

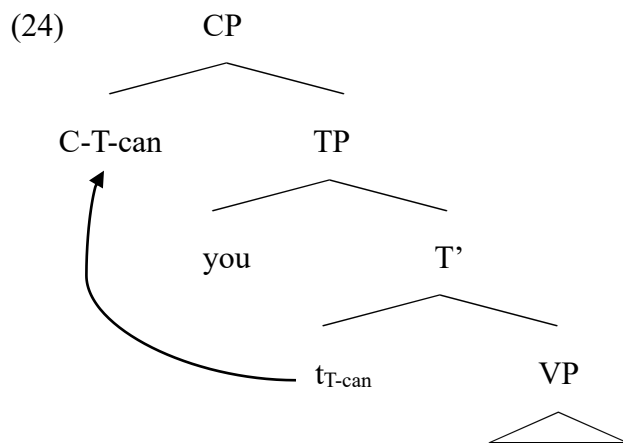
(22) *Wishes and Curses*

May you be happy.

(23) *Negative Frontings*

Never will I try to hurt you.

SAI is often assumed to be realized via T-to-C movement (see Bruening 2015 and studies cited therein). As T is taken to be the initial position of modal verbs, such analysis suggests that it is the T head that is moved to the clausal periphery. Therefore, an SAI example like (21) could be depicted as follows:



The T-to-C model illustrated above also offers an account for *do*-support, that if no modal verbs are available, it is necessary for a lexical item to receive the tense-related morpheme of T by inserting *do* to the position of C. As pointed out by Bruening (2015: 6), this T-to-C analysis explains some of the peculiar behaviors shown by SAI. For example, it naturally follows that SAI does not occur when there is an overt complementizer, because a moved modal verb and a complementizer would compete for the head position of C:

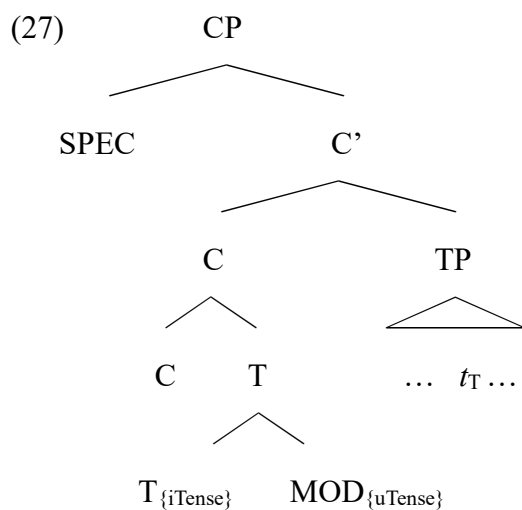
- (25) a. If he had listened to my words, he would be as rich as batman.
b. Had he listened to my words, he would be as rich as batman.
c. *If had he listened to my words, he would be as rich as batman.

In (25c), the appearance of SAI and *if* in one clause leads to ungrammaticality, which can be properly accounted for by the analysis proposed above. It also should be noted, however, that the T-to-C analysis may come short with respect to the case like *that*-headed embedded clause, as illustrated in (26):

- (26) John said that never would he betray you.

Although the complementizer *that* and SAI both occur, (26) is perfectly acceptable. On the basis of the contrast between (25) and (26), Bruening (2015) concludes that SAI is not a unitary phenomenon not only because of the inconsistency of the grammaticality induced by different complementizers, but also the variations of lexical selection (for instance, SAI in *wishes and curses* is only compatible with *may*). Nonetheless, he still advocates that the T-to-C analysis is able to deal with the core formations of SAI given in (21-23).

Regarding the current work, I argue that the T-to-C analysis does not nullify my proposal that polysemantic English modal verbs raise to T for the purpose of disambiguation, because, as it is generally assumed for the T-to-C analysis, what is raised is not the modal verb adjoined to T. Instead, it is the T head that raises to C. In other words, it is not the case that a polysemantic modal verb escapes from a criterial position, but a criterial position raises to C pied-piping the modal adjoined to it. Therefore, an SAI expression can be captured by the following structure:



It is notable that though the cyclic movement of modal verb may also generate the correct surface order, it would inevitably be against the constraint imposed on criterial position if we retain the idea that modal verbs raise to T, where they complete the valuation of unvalued features. Murphy and Shim (2020) reinterpret the criterial effect in terms of the CI interface condition, indicating the elements moved into a criterial position indeed have interpretive effects only if it stays at this position:

- (28) *Equal Embedding* (see Murphy and Shim 2020: 199)
 Agreeing features must be equally embedded.

This condition requires that the Probe and the Goal within an Agree relation cannot be divided in terms of syntactic presentation. In the standard POPE system, T in English is seen as a weak head that can act as a label only after being strengthened by the labeling in the form of $\langle F, F \rangle$. Note that T would be strong enough once the subject raises to its proximity. In that case, the labeling of TP would be successful even if the modal verb raises further. Thus, the traditional approach might be inefficient to deal with the absence of freezing effect if the modal verbs take T as an intermediate landing position. Since TP would be labeled as $\langle \varphi, \varphi \rangle$ regardless how the SAI expressions are constructed. By contrast, under the condition of (28), it is ensured the modal verb and T head must conjunctively raise to C, because the $\{iTense\}$ and the $\{uTense\}$ features cannot be equally embedded otherwise.

One may wonder how to maintain the Equal Embedding status of TP if the T head raises out of it. One possibility is that T in such contexts does not have φ -feature from the beginning. This is not a deviant conjecture as no person agreement is observed between subject and T in English when modal verbs occur:

- (29) a. I can fly.
b. You can fly.
c. He can fly.
d. We can fly.
e. *John cans fly.

The subject may be attracted to the left of T by pure EPP feature. The strengthener of T can only be the labeling $\langle Tense, Tense \rangle$ which is also responsible for the determination of the meaning of modal verbs.

To sum, we have seen that the main proposal of the present thesis also seems to apply to the data of English. First, given all the core members of modal auxiliaries in such language are all polysemantic, they are all obliged to enter into an Agree relation with T, just as argued in Harwood (2014). Therefore, it is expected English *may* cannot occur before the subject due to freezing effect, whereas its Chinese counterpart, which is monosemic, can. Second, the SAI expressions seem to suggest a possibility that English modal verbs show further movement. However, the predominant T-to-C analysis for the SAI does not conflict with my previous proposal, because the movement in SAI expressions involves the raising of T rather than modal verbs adjoined to it.

6.2.2 Polysemantic Case-marked Nominals in Japanese

Most of the case-marked nominals in Japanese can take multiple grammatical positions. In this subsection, I show that the contrast of polysemantic vs. monosemic demonstrated by these case-markings may reflect my proposal that the Agree relation is imposed on elements with more than one meaning, while dispensed with such requirement if such element has only one meaning.

- (30) *Polysemantic Case-marker*
Nominative-*ga*: subject, object
Dative-*ni*: subject, indirect object
Genitive-*no*: subject, possessor
- (31) *Monosemic Case-marker*
Accusative-*o*: object

Let us take the nominative *-ga* as an example. Canonically, *ga*-marked nominals act as grammatical subject, as suggested by (32). On the other hand, *ga*-marked object is also allowed if a stative predicate occurs in the same clause, illustrated in (33):

(32) 太郎がコーヒーを飲んだ。

Taroo-ga kofi-o nonda.

Taroo-NOM coffee-ACC drank

‘Taroo drank some coffee.’

(33) 太郎が花子が好きだ。

Taroo-ga Hanako-ga sukida.

Taroo-NOM Hanako-NOM like

‘Taroo has a crush on Hanako.’

It is suggested in Koizumi (2008) that the *ga*-marked object is a genuine grammatical object instead of a ‘secondary’ subject, which moves to TP along with the *ga*-marked subject, where multiple valuations take place simultaneously between T and two *ga*-marked nominals.

If the predicate of a clause is non-stative, the grammatical object is then marked with *-o*. Unlike *-ga*, this particle can only be suffixed to the genuine grammatical object, meaning there is no such thing as accusative subject in Japanese, as (34b) illustrates:

(34) 太郎が花子を殴る。

a. Taroo-ga Hanako-o naguru.

Taroo-NOM Hanako-ACC beat

‘Taroo will beat Hanako’

b. *Taroo-o Hanako-o naguru.

Taroo-ACC Hanako-ACC beat

It should be noticed that *o*-marked objects behave quite differently from *ga*-marked ones in terms of the scrambling environment. That the nominative object is prohibited from further movement, whereas accusative object is free:

(35) 花子が太郎が好きだ。

*Hanako-ga_i Taroo-ga t_i sukida.
Hanako-NOM Taroo-NOM like
Intended reading: ‘Taroo has a crush on Hanako.’

(36) 花子を太郎が殴る。

Hanako-o_i Taroo-ga t_i naguru.
Hanako-ACC Taroo-NOM beat
‘Taroo will beat Hanako.’

Aiming to offer a theoretical account to the contrast of (35-36), I first partially assume with Kishimoto (2013: 180) who argues that case-marked arguments need to have their case features valued/deleted via Agree. For example, nominative case is associated with T while accusative case is valued by *v*. My proposal concerning case valuation of Japanese differs from his in that I postulate such Agree requirement is exempted in the case of *o*-, which uniformly marks a single grammatical relation (i.e., the true object). Therefore, blending the dissolution of the notions of interpretability and valuation (see 6.1.1), a *ga*-marked argument may have a case feature like {uCase: ?}, uninterpretable and without valuations. In the process of Agree, such argument enters into an Agree relation with T before the valuation of the case feature in question. Up to now, the CI interface would have no clue whether to interpret this *ga*-marked argument as the subject or the object.

As to *o*-marked arguments, I argue they are always read as the grammatical object (i.e., {uCase: Acc-Obj}). In fact, it is still plausible for an *o*-marked argument to Agree with *v*, triggered by the ϕ -probe of the latter (which is a phase-head bearing uninterpretable features by nature). By doing so, the case feature of such argument may and must delete, attributed to the fact that a formal feature par excellence like {Case} is not CI-legit (Chomsky 1995: 278). Crucially, *o*-marked argument does not receive any feature valuation from *v*, suggesting no criterial position emerges at this point of derivation.

If the analysis shown above is on the right track, the possibility of the scrambling of *o*-marked object in (36) thus naturally follows. Such argument does not receive any feature valuations from the Probe (monosemic), yielding no criterial position and freezing effect. By contrast, *ga*-marked argument in (35) must have its {uCase: ?} valued via Agree, where it is determined whether it is a subject or an object. Since it receives valuation from the Probe (polysemantic), *ga*-marked object would be restricted to the very position at which Agree takes place.

The overt possessor raising in Japanese idioms described by Kishimoto (2013) also seems to suggest the constraint on the movement of polysemantic case-marked arguments. (37) exemplifies such idiomatic expression without possessor raising:

(37) そのことが健の頭にある。 (Extracted from Kishimoto 2013: 163)

Sono	koto-ga	Ken-no	atama-ni	a-ru.
that	thing-NOM	Ken-GEN	head-LOC	be-PRES

‘Ken remembers that thing.’

The possessor of the possessum nominal can be extracted to the leftmost position of the clause, as shown in (38):

(38) 健にそのことが頭にある。

Ken-ni _i	sono	koto-ga	t _i	atama-ni	a-ru.
Ken-DAT	that	thing-NOM		head-LOC	be-PRES

‘Ken remembers that thing.’

Recall it is suggested in Saito (2016) that MJ wh-phrases are wh-operators without specific quantificational force, which covertly raise to Spec, CP and enter into an Agree relation with C. At this point, wh-phrases are valued with quantificational force. If Miyagawa, Wu and Koizumi 's (2019) labeling-inducer analysis for *-ka* is plausible, we might deduce that wh-phrases in OJ are inherently valued since *-ka* occur directly on them. In terms of the contrast of polysemantic vs. monosemic, we can then treat wh-phrases with *-ka* in OJ as monosemic items, as they are uniformly interpreted as interrogatives. Thus, the fact that OJ wh-phrases move may be reduced to the absence of freezing effect. On the contrary, that MJ wh-phrases stay in-situ is merely an embodiment of criterial condition imposed on polysemantic elements whose intended meaning is determined by derivational feature valuation.

6.2.4. Case-marking as Disambiguating Device in Central Alaskan Yup'ik

The experimental study carried out by Emura (to appear) unveils that the ambiguity of case-marking significantly affects the choice of word order in Central Alaskan Yup'ik (hereafter Yup'ik), which is a language spoken by native Americans reside in southwestern Alaska. In this section, I show that this linguistic phenomenon again supports to my overall proposal that lexical items distinguished by the notion of polysemantic and monosemic show distinct syntactic behavior with respect to the possibility of movement. First observe the following sentence in which the case-markings of both the subject and the object are unambiguous.

- (40) Arna-m angute-t tangerr-ai.
 woman-ERG.SG man-ABS.PL see-IND.3SG/3PL
 “The woman is seeing the men.”

In (40), the case-marking *-m* and *-t* unambiguously indicate ergative case and absolute case respectively. Though Yup'ik is a free word-order language, speakers seem to prefer the

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