

Modal movement licensed by focus *

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1. Introduction

This paper investigates the distribution of modals in Chinese, and their interaction with focus interpretations. As is well-noted in the literature, modals can be dichotomized into *epistemic* modals and *root* modals (Ross 1969, Perlmutter 1971, Jackendoff 1972).¹ One syntactic manifestation of this distinction in Chinese is the (in)flexibility of their positions in the sentence: while epistemic modals can either precede or follow the subject, root modals cannot precede the subject in general (T.-H. J. Lin 2011, Tsai 2015), as shown in the contrast below.²

(1) Epistemic modals can precede or follow the subject

(*keneng*) Zhangsan (*keneng*) zhunbei-le wancan³
be.possible Zhangsan be.possible prepare-PERF dinner

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¹ Root modals form a heterogeneous class which can be further divided into (at least) deontic modals and dynamic modals (Palmer 1990, see Portner 2009 for a finer classification).

² We postpone the discussion of the modal *yinggai* 'should' which is lexically ambiguous between an epistemic modal and a root modal. The judgement concerning whether it can appear in a pre-subject position is less clear. We focus on the clear cases first.

³ Abbreviations: 1, 2, 3 for first, second, third person respectively; BA for object preposing marker *ba*; CL for classifier; COP for copular; FOC for focus marker; NEG for negation; PERF for perfective aspect marker; PL for plural; PROG for progressive aspect marker; Q for question marker; RED for reduplication; RSLT for resultative complement; SFP for sentence-final particle; SG for singular; TOP for topic marker.

‘Zhangsan is possible to have prepared the dinner.’

(2) Root modals cannot precede the subject

{*neng/ *hui/ *keyi} Zhangsan {neng/ hui/ keyi} zhunbei wancan
can will may Zhangsan can will may prepare dinner

Int.: ‘Zhangsan can/ will/ may prepare the dinner.’

(T.-H. J. Lin 2011:50-51, with the addition of *keyi*)

However, it has been observed that root modals can appear sentence-initially in some cases. For example, if they are in A-not-A form, the higher pre-subject position becomes available (J.-W. Lin & Tang 1995, Huang, Li & Li 2009), exemplified in (3):

(3) Root modals in A-not-A form can precede the subject

neng-bu-neng/ hui-bu-hui/ ke-bu-keyi Zhangsan zhunbei
RED-NEG-can RED-NEG-will RED-NEG-may Zhangsan prepare
wancan?
dinner

‘Can/ will/ may it be that Zhangsan prepare the dinner?’

(T.-H. J. Lin 2011:69, with the addition of *keyi*)⁴

The contrast between (2) and (3) raises questions on the mechanism that regulates the distribution of modals. This issue receives little attention until recently (e.g. T.-H. J. Lin 2011, Hsu 2016). In this paper, we approach the

⁴ The interpretation of the modals in (3) has subtle differences from their uses in (2), as noted by T.-H. J. Lin (2011) and an anonymous reviewer. To indicate the differences, we translate the modals in (3) as ‘can/ will/ may *it be that* ...’ for now, and we will return to this issue in section 3.2.

issue by first reporting two novel empirical observations on the distribution of root modals: (i) in addition to A-not-A formation, there are other cases where root modals in the higher pre-subject position are allowed, and (ii) the A-not-A form of root modals does not *always* license the pre-subject position. Instead of attributing the availability of the pre-subject position to A-not-A formation, we uncover a correlation between the pre-subject position of root modals and focus interpretations. Specifically, we suggest that the pre-subject position is licensed when the constituent that immediately follows the modal receives a focus interpretation. We then show that these new observations posit challenges to existing base generation proposals and we motivate a movement analysis to capture the correlation between the higher pre-subject position of root modals and focus interpretations. We suggest that the pre-subject position is a derived position and root modals optionally undergo head movement to the higher pre-subject position. We further suggest that this movement does not apply freely but is subject to an interface condition of Output Economy (Fox 2000, Reinhart 1995, Chomsky 2000, 2001, Miyagawa 2006, 2011). Specifically, the movement of root modals is licensed if it imposes an effect on the focus set calculation; if not, the movement is disallowed.

Three notes are in order. First, we hereafter refer to root modals in the higher (non-canonical) pre-subject position as *high (root) modals*, and those in a

lower (canonical) post-subject position as *low (root) modals*.⁵ Second, high modals and low modals display a subtle interpretive difference. We, however, would like to postpone the discussion on modal interpretation to section 3.2. Third, while the data are given in Mandarin, similar patterns are also observed in Cantonese, Taiwanese, Chenghai Teo-Swa Min and Changsha Xiang. The patterns are not specific to Mandarin but appear to be generally observed in Chinese languages.

This rest of this paper is organized as follows. Section 2 reports a generalization on the licensing conditions of high root modals: they are licensed by an immediately following focused element. Section 3 argues against alternative base-generation approaches. We show that they fall short of accounting for the correlation between high modals and focus. In Section 4, we propose a movement account for high modals and suggest that the movement is constrained by a focus-based version of output economy. Section 5 concludes.

⁵ “Subject” here does not include non-specific noun phrases which are argued to be located lower in *vP* (Diesing 1992, Tsai 2015), such as NPs headed by *you* ‘have’ as in (i). We thank Dylan Tsai for pointing this out.

(i) Keyi you san-ge-ren lai.
 may have three-CL-person come
 ‘There may be three persons coming.’

2. High root modals and focus

In this section, we first uncover a correlation between high modals and focus. Particularly, we observe that high modals are only allowed in the configuration in (4)a, but not (4)b.

(4) The distribution of high root modals

- a. ^{OK}Modal [XP_[+Focus] ...
- b. *Modal [XP_[-Focus] ...

In §2.1, we show that high modals are licensed if the constituent that immediately follows high modals (i.e. XP) receives a focus interpretation. We illustrate this observation with various focus-marking devices and constructions. Additionally, we show that XP is not confined to subjects and it can be other constituents like (preposed) objects. In §2.2, we return to A-not-A formation and we show that a parallel pattern is observed in polarity questions. We report cases where A-not-A formation (and polarity questions) fail to license high modals. We argue that high modals are not inherently related to A-not-A formation; instead, the licensing effect is achieved by the focus interpretation associated with questions.

2.1. Focus interpretations

We observe that high (root) modals are licensed as long as the following element receives a focus interpretation. We discuss four relevant cases, namely, (i) positions of contrast/correction in the discourse; (ii) focus-

marking devices such as focus marker *shi*; (iii) *lian...dou* ‘even...also’ focus constructions; and (iv) elements that come with inherent focus such as *wh*-expressions.

First, an element may receive a focus interpretation if it is in contrast with another element in the discourse. In (5), the subject *ni* ‘you’ is in contrast with *ta* ‘s/he’ in the second clause (with regard to the issue concerning who can go), marked by a subscripted “F”. High modals are licensed in both clauses.

(5) Contrastive focus on the subjects

Keyi *ni_F* qu, ye keyi *ta_F* qu

may 2SG go also may 3SG go

‘It is allowed to be that you go, and it is also allowed to be that s/he goes.’

In contrast, if the element being contrasted is separated from the high modal, the sentence is degraded. In (6), the predicate *liuxia* ‘stay’ is contrasted with *zou* ‘leave’, where the (non-focused) subject intervenes between the high modal and the contrastive focus.

(6) Contrastive focus on the predicates

*Keyi ni *liuxia_F*, ye keyi ni *zou_F*

may 2SG stay also may 2SG leave

Int.: ‘It is allowed to be that you stay, and it is also allowed to be that you leave.’

This asymmetry correlates with the stress pattern in sentences with high modals in Northern Mandarin, where the accented element receives a

contrastive reading. High modals are licensed by an immediately following accented element like the subject in (7), but not one that appears at a distance with the high modal like the object in (8).

(7) Accented subject

Keyi *ZHANGSAN_F* qu Beijing

may Zhangsan go Beijing

‘It is allowed to be that it is ZHANGSAN (but not someone else) who goes to Beijing.’

(8) Accented object

*Keyi Zhangsan qu *BEIJING_F*

may Zhangsan go Beijing

Int.:‘It is allowed to be that Zhangsan goes to BEIJING (but not somewhere else).’

The same can be said to corrective focus. The contrast in the following pairs suggests that high modals are licensed if the following elements receive a focus interpretation.

(9) Corrective focus on the subject

Keyi *ni_F* qu, bushi *ta_F*

may 2SG go not 3SG

‘It is allowed to be that you go, not him/her.’

(10) Corrective focus on the predicate

*Keyi ni liuxia_F, bushi zou_F
may 2SG stay not leave

Int.: 'It is allowed to be that you stay, not leave.'

Second, focus may also be marked by syntactic devices such as the focus marker *shi* (Teng 1979, Shyu 1995, Cheng 2008, Erlewine 2020, *i.a.*). As already mentioned in J.-W. Lin & Tang (1995:62, footnote 7), insertion of the focus marker *shi* after the high modal would improve the sentences, as in (11). Importantly, if *shi* is inserted before the verb (phrase), we do not observe the same improvement, as in (12). The contrast again suggests that high modals are sensitive to the position of the focus: high modals require an immediately following focused element.

(11) Shi-focus associated with the subject

Keyi *(shi) Zhangsan_F qu Beijing
can FOC Zhangsan go Beijing

'It is allowed to be that it is Zhangsan that goes to Beijing.'

(12) Shi-focus associated with the object/ the whole VP

*Keyi Zhangsan shi [qu Beijing]_F
can Zhangsan FOC go Beijing

Int.: 'It is allowed to be that it is Beijing that Zhangsan goes to.'

Another focus marking device is *lian...dou* 'even...also'. It has been argued that the element following *lian* 'even' receives a focus interpretation (Paris 1979, Shyu 1995, Cheng and Vicente 2013, *i.a.*). We observe that high

modals are licensed by an immediately following *lian*-phrase, as in (13). Note that we embedded the high modal clause under another predicate, since (root) clauses with an initial monosyllabic modal (e.g. *hui* ‘will’) are degraded for independent reasons. This also shows that high modals are not a root/main-clause phenomenon.

(13) *Lian...dou*-focus on the subject

Wo juede [hui *lian* Zhangsan_F dou zhao-bu-dao Lisi]

1SG think will even Zhangsan also find-NEG-RSLT Lisi

‘I think that it will be that even Zhangsan cannot find Lisi.’

A contrast is observed when the *lian*-phrase does not immediately follow the high modal. Note that the *lian*-phrase must occur pre-verbally hence an object focused by *lian* will be fronted. (14) shows that when the *lian*-phrase occurs in a post-subject position, at a distance from *hui* ‘will’, the sentence is degraded.

(14) *Lian...dou*-focus on the object

*Wo juede [hui Zhangsan *lian* Lisi_F dou zhao-bu-dao]

1SG think will Zhangsan even Lisi also find-NEG-RSLT

Int.: ‘I think that it will be that Zhangsan cannot find even Lisi.’

Lastly, high modals are also licensed if they are immediately followed by *wh*-elements. This is demonstrated in (15), where the subject is a *wh*-expression. It contrasts with (16), where the *wh*-expression appears at a distance from the high modal (i.e. in the object position). Assuming that *wh*-phrases bear an

inherent focus interpretation (Rochemont 1986), this contrast matches what has been observed in the preceding three focus-related cases.

(15) Wh-subject

Name, keyi *shei_F* mianfei qu Beijing?

so may who free.of.charge go Beijing

‘So, who may go to Beijing for free?’

(16) Wh-object

*Name, keyi Zhangsan mianfei qu *nali_F*?

so may Zhangsan free.of.charge go where

Int.: ‘So, where may Zhangsan go for free?’

It should be noted that while all the above examples involve subject focus, high modals can be licensed by elements other than the subject. For example, in *lian...dou* focus constructions, *lian* ‘even’ may associate with an object and the whole *lian*-phrase can be placed in a pre-subject position (Shyu 1995). In such cases, a high modal is licensed in the position before the *lian*-phrase (= (17)a), but not before the subject (= (17)b). This suggests that the licensing condition of high modals concerns focus interpretations instead of the status of being a subject.

(17) Object focus in the *lian...dou* construction (pre-subject)

a. Jingran keyi *lian* *GB_F* na-ge-laoshi dou bu-jiao,

unexpectedly may even GB that-CL-teacher also NEG-teach

zhen lipu!

really unacceptable

‘How could that teacher not teach GB (Government & Binding theory)! That's insane!’

- b. *Jingran *lian* *GB_F* keyi na-ge-laoshi dou bu-jiao,
 unexpected even GB can that-CL-teacher also NEG-teach
 zhen lipu!
 really unacceptable

Analogously, a predicate can also be focused by the *lian...dou* focus constructions (Cheng and Vicente 2013) and such a *lian*-phrase also licenses high modals.

(18) Predicate focus in *lian...dou* focus constructions

- a. Wo juede [hui *lian* *chi_F* ta dou bu chi]
 1SG think will even eat 3SG also NEG eat
 ‘I think it will be that s/he even doesn’t eat.’
- b. *Wo juede [*lian* *chi_F* hui ta dou bu chi]
 1SG think even eat will 3SG also NEG eat

To see one more example, the focused element that licenses high modals can be as large as a clause. Consider the following sentence, where the whole clause following the high modal is being contrasted with the second clause.⁶

⁶ Another example showing a clausal focus following high root modals, marked by the *shi...de* cleft constructions:

- (ii) (Ruguo yizhi zhao-bu-dao xiongshou, name ...)
 if keep find-NEG-RSLT murderer then
 Hui-bu-hui shi [*sizhe* *ziji zisha*]_F de?
 RED-NEG-will FOC the.dead self suicide SFP
 ‘(If we can’t find the murderer this whole time, ...) will it be that the dead actually killed himself?’

(19) Contrastive focus on the whole clause

Keyi [*Zhangsan ba wenjian na-guo-qu*]_F, ye keyi [*Lisi ba*
may Zhangsan BA document take-pass-go also can Lisi BA
tuzhang song-guo-lai]_F
stamp give-pass-come

‘It is allowed to be that Zhangsan passes the document there, and it
is also allowed to be that Lisi passes the stamp here.’

Before we leave this section, it is instructive to see that not all information-structurally-marked elements license high modals. For example, topics do not license high modals. Topics in Mandarin can be marked by the particle *ne* (C. N. Li and Thompson 1989) but sentences with a high modal are degraded even if it is immediately followed by a topic phrase.

(20) Topicalized objects

a. Wo juede [*zhe-ben-shu ne*, Zhangsan hui toutou na-qu
1SG think this-CL-book TOP Zhangsan will secretly take-go
maiqian]
sell.for.money

‘I think that for this book, Zhangsan will secretly sell it for
money.’

b. *Wo juede [*hui zhe-ben-shu ne*, Zhangsan toutou na-qu
1SG think will this-CL-book TOP Zhangsan secretly take-go
maiqian]
sell.for.money

Additionally, Cheng & Vicente (2013) suggests that the first occurrence of the verb in the verb doubling cleft constructions receives a topic interpretation (also see Lee 2021). It does not license high modals either.

(21) Topicalized verbs

a. *Chi*, Zhangsan shi keyi chi la de

eat Zhangsan COP may eat spicy SFP

‘Concerning eating, Zhangsan may eat spicy food.’

b. *Keyi *chi*, Zhangsan shi chi la de

can eat Zhangsan COP eat spicy SFP

Building on the above observations, we generalize the licensing condition of high modals as in (22). In the next section, we return to A-not-A formation and address its relevance to (22).

(22) The licensing condition of high root modals

High root modals are licensed if the element immediately following them receives a focus interpretation.

2.2. *A-not-A questions and polarity questions*

The previous section makes clear that high modals are not exclusively licensed by A-not-A formation. In this section, we suggest that the link between high modals and A-not-A formation is indeed indirect and is mediated by the focus interpretation associated with questions. First, we

observe that polarity questions (e.g. marked by rising intonation or question particles) may also license high modals.⁷

(23) Polarity questions

Keyi Zhangsan qu Beijing {↗/ ma}? (↗ = rising intonation)

may Zhangsan go Beijing Q SFP.Q

‘Is it allowed to be that Zhangsan goes to Beijing?’

Second, there are cases where A-not-A questions or polarity questions fail to license high modals. For example, if an A-not-A question comes with focus marking on some element at a distance with the high modal (e.g. objects), the high modal is not licensed. Given the context in (24), questions like “Is it allowed to be that *someone else* goes to Beijing then?” (i.e. subject focus) and “Is it allowed to be that Lisi goes *somewhere else* then?” (i.e. object focus) should be both discourse-relevant. However, with a high modal, only the former question can be asked, not the latter.

(24) A-not-A questions with different focus positions

[Lisi’s Mainland Travel Permit had expired, so that he cannot go to Beijing. If so...]

⁷ High root modals can also be licensed in disjunctive questions when the disjuncts are the subjects, but not the objects. This contrast can be explained if disjunctive questions using *haishi* (composed of a focus marker and a copular) in Chinese also express focus (C.-Y. E. Tsai 2015).

- (iii) Keyi Zhangsan_F haishi Lisi_F qu?
 may Zhangsan or.Q Lisi go
 ‘Zhangsan or Lisi, who may go?’
- (iv) *Keyi Zhangsan qu Beijing_F haishi Taipei_F?
 may Zhangsan go Beijing or.Q Taipei?
 Int.: ‘Beijing or Taipei, which one may Zhangsan go to?’

- a. Ke-bu-keyi *Zhangsan_F* qu Beijing?
 RED-NEG-may Zhangsan go Beijing
 ‘Is it allowed to be that Zhangsan goes to Beijing then?’
- b. *Ke-bu-keyi Lisi qu *Taipei_F*?
 RED-NEG-may Lisi go Taipei
 Int.: ‘Is it allowed to be that Lisi goes to Taipei then?’

This is by no means particular to A-not-A questions. In polarity questions with high modals, the sentence in (25)a is well-formed, where the focus marker *shi* is attached to the subject. However, if *shi* is attached to the VP as in (25)b, which allows either object or VP focus (but not subject focus), the sentence is degraded.

(25) Polarity questions with different focus positions

- a. Keyi shi *Zhangsan_F* qu Beijing {↗/ma}?
 may FOC Zhangsan go Beijing Q SFP.Q
 ‘Is it allowed to be that Zhangsan but not someone else goes to Beijing?’
- b. *Keyi Zhangsan shi qu *Beijing_F* {↗/ma}?
 may Zhangsan FOC go Beijing Q SFP.Q
 ‘Is it allowed to be that Zhangsan goes to Beijing but not somewhere else?’

These examples indicate that the A-not-A form and the polarity question markers (i.e. the rising intonation and the question particles) are not the true

licensors of high modals, since they do not necessarily license them. Instead, we suggest that the apparent licensing effects imposed by A-not-A questions are because the question so formed comes with subject focus. The licensing effects disappear in cases without subject focus (*pace* J.-W. Lin and Tang 1995; T.-H. J. Lin 2011). Furthermore, we suggest that the correlation between high modals with A-not-A formation (and polarity question markers) can be subsumed under the generalization given in (22), where the licensing of high modals depends on the position of focus triggered in the above A-not-A and polarity questions. Particularly, the focus has to immediately follow the high modal, in the same way as the examples in §2.1.

Before we leave this section, since focus interpretations in questions may not be as clear as the cases discussed in §2.1, we briefly discuss how focus interpretations are manifested in A-not-A questions and polarity questions. We suggest that questions with different focus interpretations have a different set of felicitous follow-up phrases. We demonstrate this idea with A-not-A questions, but the same goes for polarity questions. Consider the baseline example in (26). Here, the A-not-A question does not come with a high modal. Both answers (A1) and (A2) are negative, and it is felicitous to provide the additional information by follow-up phrases either correcting *the subject* or *the object*. We refer to the questions compatible with different correction sites as focus-neutral questions.

(26) An A-not-A question with a *low* root modal

a. Q: Zhangsan ke-bu-keyi zhunbei wancan?

Zhangsan RED-NEG-may prepare dinner

‘May Zhangsan prepare the dinner?’

b. A1: Bu keyi, zhiyou *Lisi_F* keyi zhunbei wancan (subj. focus)

NEG may only Lisi may prepare dinner

‘No, only Lisi may prepare the dinner.’

c. A2: Bu keyi, ta zhi keyi zhunbei *zaocan_F* (object focus)

NEG may 3SG only may prepare breakfast

‘No, he may prepare the breakfast only.’

Now consider an A-not-A question with a high modal, as in (27). After providing a negative answer to the question, it is felicitous to follow-up on the question by correcting the subject (A1), but it is infelicitous to do so by correcting the object (A2). The question in (27) is thus not focus-neutral in the same way as (26). Allowing follow-up phrases such as (A1) instead of (A2) suggests that the question indeed comes with subject focus. The focus interpretation is manifested as forcing the Question Under Discussion (QUD, Roberts 1996, 2012) to be “*who* may prepare dinner” instead of “*what* Zhangsan may prepare” (*cf.* a focus-neutral question like (26) is compatible with both). The infelicity of (A2) in (27) then follows from a relevance maxim for not being relevant to the QUD.

(27) An A-not-A question with a *high* root modal

a. Q: Ke-bu-keyi Zhangsan zhunbei wancan?

RED-NEG-may Zhangsan prepare dinner

‘Is it allowed to be that Zhangsan prepares the dinner?’

b. A1: Bu keyi, zhiyou *Lisi*_F keyi zhunbei wancan (subj. focus)

NEG may only Lisi may prepare dinner

‘No, only Lisi may prepare the dinner.’

c. A2: #Bu keyi, ta zhi keyi zhunbei *zaocan*_F (#object focus)

NEG may 3SG only may prepare breakfast

‘No, he may prepare the breakfast only.’

To sum up, the data presented in both subsections can be captured by the generalization given in (22), repeated below. In the following two sections, we turn to different approaches to account for this generalization.

(28) The licensing condition of high root modals

High root modals are licensed if the element immediately following them receives a focus interpretation.

3. Previous approaches to high root modals

While the phenomenon of high (root) modals has been noticed in the early literature, it is not until recently that attempts have been made to capture the distribution of these modals (e.g. T.-H. J. Lin 2011, Hsu 2016). Common in these analyses is that high modals are taken to be base-generated in the pre-

subject position and that high modals are not interpreted in the same way as low modals. In other words, root modals are lexically ambiguous and the high and low modals are not derivationally related. In section 3.1, we first illustrate how the generalization in (22)/(28) poses challenges to these existing accounts. We then discuss the issue on modal interpretation in section 3.2.

3.1. Base generation approaches

In this subsection, we discuss two base generation approaches to high modals suggested in the literature. They differ in the semantic contribution of high modals, but they share the idea that high modals are not derivationally related to low modals. We also discuss an in-situ approach to modals, where their relative order to subjects is due to subject movement.

T.-H. J. Lin (2011) observes that high modals (in A-not-A form) come with an epistemic-like reading which is often absent in their low positions.⁸ This appears to suggest that high modals are in fact epistemic modals which may base-generate in the pre-subject position (as in (1)). In what follows, however, we show that high modals display substantial distributional differences to genuine epistemic modals and thus should not be treated alike.

First, the high position of genuine epistemic modals like *keneng* ‘be possible’ does not count on an immediately following focus. They can freely occur in

⁸ Note that Lin’s work concerns a broader issue of finiteness in Mandarin and he only mentions in passing that high modals may be related to epistemic modals. An anonymous reviewer also notes this possibility.

the high position with (in-situ) object focus, as shown in (29). This contrasts with the distribution of high modals discussed in the previous section. Positing that high modals are epistemic modals does not account for the contrast.

- (29) *Keneng ta shi qu-le Beijing_F, bu shi Taipei_F*
 be.possible 3SG FOC go-PERF Beijing NEG FOC Taipei
 ‘It is possible that he went to Beijing instead of Taipei.’

Second, high modals further contrast with genuine epistemic modals in modal stacking. It is instructive to consider the modal *yinggai* ‘should’ which is well-known to be ambiguous between an epistemic modal and a deontic modal. On one hand, the epistemic *yinggai* cannot be embedded below the epistemic *keneng* ‘be possible’, as suggested in T.-H. J. Lin (2012:157, =(30)), suggesting that a stronger epistemic modal cannot be embedded under a weaker one.

- (30) a. *Zhangsan yinggai^{Epi} keneng lai*
 Zhangsan should be.possible come
 ‘It should be the case that Zhangsan is possible to come.’
 b. **Zhangsan keneng yinggai^{Epi} lai (le)*⁹
 Zhangsan be.possible should come SFP

On the other hand, the deontic *yinggai* can (in fact must) be embedded under the epistemic *keneng* (T.-H. J. Lin 2012; see also Tsai 2015).

⁹ Lin’s original gloss for *keneng* is ‘be likely to’.

(31) a. (Weile xuefen,) Zhangsan keneng *yinggai*^{Deo} lai
 for credit Zhangsan be.possible should come
 ‘(For the sake of course credits,) it is possible that Zhangsan should
 come.’

b. * ... Zhangsan *yinggai*^{Deo} keneng lai
 Zhangsan should be.possible come

Given this background, the relative order with *keneng* is thus informative to whether a modal is epistemic or deontic. Precisely, if a high (pre-subject) *yinggai* is an epistemic modal, it should not be able to follow *keneng*; if it is a deontic modal, we predict the opposite. The example in (32) lends support to the deontic status of a high modal: it occurs before the subject but after *keneng*.

(32) Ruguo Zhangsan bing-le, name keneng *yinggai* ni_F qu
 if Zhangsan sick- PERF then be.possible should 2SG go
 zhunbei wancan
 prepare dinner
 ‘If Zhangsan is sick, perhaps it should be that you (but not Zhangsan)
 prepare the dinner.’

Additionally, (33) reveals that the high *yinggai* cannot precede *keneng*, an observation that further speaks against its epistemic status.

(33) a. * ... name *yinggai* keneng ni_F qu zhunbei wancan
 then should be.possible 2SG go prepare dinner

b. * ... name *yinggai* ni_F keneng qu zhunbei wancan
 then should 3SG be.possible go prepare dinner

Int.: ‘... then it should be that perhaps you (but not Zhangsan) prepare the dinner.’

Another approach to high modals, as suggested in Hsu (2016), is to treat them as focus operators base-generated above subjects. Precisely, she suggests that high modals are *verum focus operators* in the CP domain (i.e. Focus heads). According to this approach, high modals assign focus to the whole sentence (proposition). One of her arguments comes from the intervention effects displayed by *wh*-phrases.

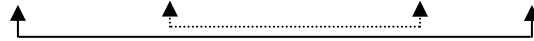
(34) **Yinggai* Zhangsan mai *shenme* ne? (Hsu 2016:263)

should Zhangsan buy what SFP.Q

Int.: ‘What should Zhangsan buy?’

She suggests that (34) is disallowed because *yinggai* is intervening between a covert question operator (above the high modal) and the *wh*-object (below the high modal), following Beck (2006).

(35) *[Q_{OP} ... Focus_{OP}=*Yinggai* [... XP_{focus} ... *wh* ...]



Her proposal, however, wrongly predicts high modals with *wh*-subjects to be ungrammatical (= (36) below, see also the example in (15)).

(36) *Yinggai* *shei* qu?

should who go

‘Who should go?’

Furthermore, although both Hsu's account and our generalization in (22)/(28) relates high modals with focus, the relations are in opposite direction. In Hsu's account, the focus reading is attributed to the high modals (i.e. high modals \rightarrow focus). In (22)/(28), however, the modal position *depends* on the focus reading (i.e. focus \rightarrow high modals), but not the other way around.¹⁰ Hence, we conclude that Hsu's version of base generation account is untenable either.

Another version of the base-generation approach, as suggested by an anonymous reviewer, is to assign one and only one position to root modals. The apparent "high" and "low" positions of modals are due to subject movement. To see how this may work, it is crucial to assume that root modals are raising verbs and take non-finite clauses as their complements (J.-W. Lin & Tang 1995; Bhatt 1998; Wurmbrand 1999). When the embedded subject raises to the matrix clause, it results in the canonical "subject > modal" order. Crucially, when a subject is focused,riterial Freezing (in the sense of Rizzi 2015 and Shlonsky & Rizzi 2018, which bans movement from focus positions) requires the subject to stay within the low focus position of complement clause.¹¹ This gives rise to the "modal > subject" order. This approach, however, faces empirical challenges in cases involving non-subject elements.

¹⁰ Moreover, if high modals were indeed a focus operator, they would be predicted to occur in a plain declarative sentence *without any other focus marking device*, since themselves already marked the focus. This is contrary to the facts. Hsu's account thus incorrectly predicts high modals to pattern with genuine focus markers such as *shi*, which may occur in a pre-subject position unproblematically.

¹¹ A theory-internal concern is that if modals are raising predicates and subjects move for Case reasons, the movement should be obligatory (Li 1990).

For example, the sentences in (17) (reproduced below in (37)) represent a case where a high modal is licensed by a fronted object focus:

(37) Object focus in the *lian...dou* construction (pre-subject)

- a. Jingran keyi *lian* GB_F na-ge-laoshi dou bu-jiao,
 unexpectedly may even GB that-CL-teacher also NEG-teach
 zhen lipu!
 really unacceptable
 ‘How could that teacher not teach GB (Government & Binding
 theory)! That's insane!’
- b. *Jingran *lian* GB_F keyi na-ge-laoshi dou bu-jiao,
 unexpected even GB can that-CL-teacher also NEG-teach
 zhen lipu!
 really unacceptable

The contrast in (37) shows that the licensing of high modals depends crucially on the position of the object focus, but not the subject. A subject movement account would suggest the non-focused subject, being free from Criterial Freezing, can (indeed must, for Case reasons) raise across the modal, which is contrary to facts. We thus reject a subject movement approach.

As we will see in section 4, an explanation in terms of modal movement is arguably both empirically and conceptually superior to these base generation accounts. Yet, before proceeding to our proposal, we discuss a remaining issue in need of clarification, namely the difference in the interpretation of high and low modals.

3.2. The interpretation of high root modals

In section 3.1, we suggested that the high/low position does not correspond to the epistemic/deontic split. We suggest instead that the interpretational difference between high and low modals concerns the *ought-to-be* reading and *ought-to-do* reading of deontic modals (Feldman 1986, Brennan 1993, Hacquard 2006, Portner 2009, *i.a.*). We suggest that high modals consistently denote an *ought-to-be* reading, whereas low modals are ambiguous between the two readings. The *ought-to-be* reading may sometimes be conflated with the epistemic reading, but we show that the former differs from the latter upon closer scrutiny.

T.-H. J. Lin (2011) observes that the interpretation of high modals may differ from low modals. We illustrate this idea with *yinggai* ‘should’, as reflected in the translations in (38)a-b. Both subjects are focused to form a minimal pair.¹²

- (38) a. *Yinggai* [Zhangsan]_F zhunbei wancai (high root modal)¹³
should Zhangsan prepare dinner
‘It should be that Zhangsan (but not someone else) prepares the dinner.’
- b. [Zhangsan]_F *yinggai* zhunbei wancai (low root modal)
Zhangsan should prepare dinner

¹² The same is also observed for other root modals like *keyi* ‘may’, *neng* ‘can’ and *hui* ‘will’. Here, we illustrate with *yinggai* ‘should’ first, which displays a clearer meaning contrast between the high and low uses.

¹³ Note that (38)a also has an irrelevant (and less salient) epistemic reading of *yinggai* ‘should’.

‘Zhangsan (but not someone else) should prepare the dinner.’

While (b) expresses an obligation on Zhangsan to prepare the dinner, the same obligation seems not to be placed on Zhangsan in (a). Rather, it obligates the state of affairs that Zhangsan prepares the dinner to happen. The obligation may instead fall on the hearer, for instance. We argue that the difference of (a) and (b) in (38) is comparable to the distinction between the *ought-to-be* reading and *ought-to-do* reading (Feldman 1986, Brennan 1993, Hacquard 2006, Portner 2009, *i.a.*). Consider the English examples in (39):

(39) a. Murderers ought to go to jail. (ought-to-be)

b. Wickham ought to apologize. (ought-to-do) (Hacquard 2006:40)

The most natural way to interpret (a) is that the situation of murderers’ going to jail ought to occur, but not that murderers have an obligation to go to jail. The obligation is connected to a discourse referent, e.g. the government. In (b), however, it is *Wickham* that is required to apologize, i.e. the obligation of an action is connected to the subject. The contrast here is parallel to the contrast in (38)a-b: the (a) sentences denote an *ought-to-be* reading, while the (b) sentences an *ought-to-do* reading.¹⁴

It should be noted that, however, the *ought-to-be* reading is not strictly unavailable for low modals. For examples, both sentences in (40) convey a (salient) *ought-to-be* reading.

¹⁴ Note that the (b) sentences are in fact ambiguous between the two readings, although the *ought-to-be* reading may be less salient.

(40) a. *Yinggai* [sharenxiongshou]_F qu zuolao, er bu-shi
 should murderer go be.imprisoned but NEG-be
 wugu de ren
 innocent MOD people

‘It ought to be that murderers go to jail, but not innocent people.’=(b)

b. [Sharenxiongshou]_F *yinggai* qu zuolao, er bu-shi
 murderer should go be.imprisoned but NEG-be
 wugu de ren
 innocent MOD people

‘It ought to be that murderers go to jail, but not innocent people.’=(a)

The most natural interpretation of both sentences is that they express that the state of affairs concerned (i.e. “murderers go to jail”) ought to occur, rather than placing the obligation on “murderers”. Hence, low modals, unlike high modals, are ambiguous between an ought-to-do and ought-to-be reading.¹⁵ It should be admitted that in some cases the ought-to-be reading of low modals may be less salient, however.

Now we contrast the *ought-to-be* reading with the *epistemic* reading. Following the Kratzerian framework on modality (Kratzer 1977, 1991), where modal interpretation involves a contextually determined conversational background (and an ordering source), an ought-to-be reading (e.g. in (40)a) concerns all worlds compatible with, for instance, some set of

¹⁵ We set aside the question on why high modals cannot convey an ought-to-do reading.

the laws and moral principles, whereas an epistemic reading concerns worlds compatible with what is known in the actual world. Their difference can be illustrated in (41):

(41) Ju wo suo-zhi, *yinggai*^{Epi} sharenxiongshou hui qu
accord 1SG that-know should murderer will go

zuolao

be.imprisoned

‘According to what I know, it is probably the case that murders will go to jail.’

(41) contains a genuine epistemic *yinggai* ‘should’. Unlike the high (deontic) *yinggai* in (40)a, the state of affairs is evaluated under a set of facts that belongs to the speaker’s knowledge in (41). There is no obligation expressed by the epistemic *yinggai*.

The difference of the ought-to-be and epistemic readings is further supported by a syntactic asymmetry. Tsai, Yang and Lau (2017) notice an interesting asymmetry between ought-to-be and epistemic modals with regard to their ability to license a quantity subject indefinite. Provided that quantity subject indefinites in Chinese are generally disallowed (Li & Thompson 1989), ought-to-be modals exceptionally allow a quantity subject indefinite. This asymmetry carries over to high deontic *yinggai* and epistemic *yinggai*, as shown in (42)-(43) below:¹⁶

¹⁶ For further discussion on why epistemic modals fail to license a quantity subject indefinite, readers may refer to Tsai, Yang and Lau (2017).

(42) High deontic *yinggai*

Yinggai^{Deo} [san-ge-ren]_F zuo yi-bu-che, er bu-shi si-ge.

should three-CL-person sit one-CL-car but NEG-be four-CL

‘It ought to be that three persons are seated in one car, but not four persons.’

(43) Epistemic *yinggai*

**Yinggai*^{Epi} [san-ge-ren]_F zuo-le yi-bu-che, er bu-shi

should three-CL-person sit-PERF one-CL-car but NEG-be

si-ge.

four-CL

Int: ‘It is probably the case that three persons have been seated in one car, but not four persons.’

Based on the evidence from both meaning contrast (as in (40)a vs. (41)) and syntactic asymmetry (as in (42) vs. (43)), it is now clear that high (deontic) *yinggai* is not an epistemic modal, but a deontic modal with an ought-to-be reading. This is also true for other high (root) modals. For example, high *keyi* has an *allowed-to-be* reading (as compared to an *allowed-to-do* reading) and licenses a quantity subject indefinite in (44).¹⁷

¹⁷ High *neng* ‘can’ and *hui* ‘will’ are also able to license a quantity subject indefinite:

- (v) [The same context with (44), you asked:]
Neng-bu-neng [si-ge-ren]_F zuo yi-bu-che?
RED-NEG-can four-CL-person sit one-CL-car
‘Can it to be that four persons are seated in one car?’
- (vi) [The same context with (44), the taxi driver answered:]
Zheli bu-hui [si-ge-ren]_F zuo yi-bu-che de.
here NEG-will four-CL-person sit one-CL-car SFP

(44) [Context: You and your friends were calling a taxi. However, the capacity for the taxi is limited to three persons. You then asked the taxi driver:]

Keyi [si-ge ren]_F zuo yi-bu che ma?

may four-CL person sit one-CL car SFP.Q

‘Is it allowed to be that four persons are seated in one car?’

We therefore conclude that high (root) modals are not epistemic modals, but root modals that are concerned with states of affairs, e.g. whether they ought to or are allowed to occur. In the next section, we pursue an account where high modals are derived by moving a low modal to a higher position.

4. A movement approach

We retain the classic treatment that root modals are consistently base-generated below Spec TP (i.e. below the surface subject) (Tsai 2015) and suggest that high modals are in a derived position. We propose that root modals undergo (head) movement from the lower position to the position right above a focused element, detailed in (45).¹⁸

(45) Modal movement

[Mod^{root} [CP/TP XP_[+Focus] [___ [VP ...]]]

‘Here, (our practice is that) there wouldn’t be four persons being seated in one car.’

¹⁸ The landing site of the modal may be a specifier position or an adjoined position. The distinction is immaterial here; but see Matushansky (2006), Lechner (2007), Iatridou and Zeijlstra (2013) for possible implementations.

Crucially, we suggest that while this movement is optional, it is restricted to cases where it crosses a focused element. The movement is otherwise unavailable in the absence of such a focused element. We propose that this restriction follows from a version of Output Economy, following the same spirit in Fox (2000), Reinhart (1995), Chomsky (2000, 2001), Miyagawa (2006, 2011), among others.

(46) Output Economy (focus version)

Optional operations must affect the output with regard to focus set calculation.

The core idea is that the movement of modals must have an effect on the output which would otherwise be ruled out due to its vacuity. In our case of high (root) modals, a focus element is crucial on the path of the moving modals as it ensures the movement to have an effect on the calculation of the focus set. In contrast, the absence of such focus elements renders the movement vacuous in violation to (46). In the following subsections, we detail the implementation of the proposal with concrete examples in §4.1. We discuss a further issue with A-not-A questions and focus reading in §4.2.

4.1. Modal movement and the calculation of the focus set

Here we assume a Roothian framework on focus (Rooth 1985, 1992) which keeps track of both the ordinary semantic values and the focus semantic values during the derivation. The latter is obtained by substituting the

alternatives triggered by the focus-marked element(s). Following Beck (2006), we suggest that a focus operator can look at the focus semantic values and “reset” the focus semantic values (or the alternative set) of its complement, i.e. replacing the focus semantic values with the ordinary semantic values (*cf.* Rooth’s \sim operator, and see also discussions in Kotek 2016, 2019, Erlewine 2019). For space reasons, we abstract over the details of the semantic composition, but we stress the distinction between focused elements and the focus set calculated against the focused element. It is the latter on which the proposed modal movement imposes an effect.

To see a concrete example, consider the following sentences both with subject focus. For expository reasons, we consider cases involving an overt focus marker (i.e. *shi*) with a contrasting continuation in the second clause.

- (47) Shi [*Zhangsan_Fkeyi lai*], bu shi [*Lisi keyi lai*]
 FOC Zhangsan may come NEG FOC Lisi may come
 ‘It is the case that Zhangsan may come, not that Lisi may come.’

- (48) Keyi shi [*Zhangsan_Flai*], bu shi [*Lisi lai*]
 may FOC Zhangsan come NEG FOC Lisi come
 ‘It is allowed to be that Zhangsan comes, not that Lisi comes.’

We suggest that the focus marker *shi* comes with a “resetting” focus operator which sets the upper bound of the focus set. In effect, this gives rise to the crucial difference between (47) and (48). In (47), the modal *keyi* ‘may’ in the first clause is within the focus set closed off by *shi*. It generates the set of alternatives as {Zhangsan may come, Lisi may come, Wangwu may

come, ...}. The continuation is appropriately contrasted with the first clause as it is one of the alternatives. Contrarily, the modal in (48) is not included in the focus set. The focus set is then slightly different, which is now {Zhangsan comes, Lisi comes, Wangwu comes...}. The contrasting continuation in (48) is the one without the modal *keyi* ‘may’, which is one of the alternatives.

It should be noted that while the proposed movement of modals does not contribute to the focus reading *per se* (as it is the subject that receives the focus interpretation in both cases), it affects the calculation of the focus set. The interpretive difference is revealed in the attempt to add different continuations to the sentences in (47) and (48), illustrated in (49) and (50), both of which are infelicitous due to a mismatch between the focus set and the contrasting phrase.^{19,20}

(49) #Shi [*Zhangsan*_F *keyi lai*], bu shi [*Lisi lai*]
 FOC Zhangsan may come NEG FOC Lisi come

¹⁹ The interpretative difference will become truth-conditional if the modal moves across a focus-sensitive operator, e.g. *zhi(you)* ‘only’ (Erlewine 2015), as shown in the contrast below. The semantic effect here not only arises from the difference in focus set calculation, but also the scopal interaction between the exclusive ‘only’ (which contains a universal quantification) and the modal (see also Lee 2019).

(vii) *Zhiyou xueshang*_F *keyi lai* (, *laoshi bu keyi lai*).
 only student may come teacher NEG may come
 ‘Only students may come. Teachers may not come.’

(viii) *Keyi zhiyou xueshang*_F *lai* (, *dan laoshi lai ye meiguanxi*)
 may only student come but teacher come also do.not.matter
 ‘It is allowed to be that only students come, but it is also fine for teachers to come.’

²⁰ For other cases without an overt focus operator discussed in §2.1, we suggest that there is a null counterpart of *shi* (in line with Rooth, whose ~ operator is also null). In cases of questions, we follow Kotek (2016, 2019) and assume that there is a resetting operator, *ALTSHIFT*, which is distinct from a (higher) question operator. Modals escape from the calculation of the focus set by the proposed movement (while being within the scope of the question operator).

(50) #Keyi shi [*Zhangsan_F* lai], bu shi [Lisi keyi lai]
 may FOC Zhangsan come NEG FOC Lisi may come

Let's turn to what happens when there is no focus on the movement path of high modals. (51) is the unacceptable case, where the focused element is the object.²¹ We suggest that this is because the movement does not affect the calculation of the focus set, hence is in violation of Output Economy in (46).

(51) *Keyi Zhangsan shi qu *Beijing_F*
 may Zhangsan FOC go Beijing

Int.: 'It is allowed to be that it is Beijing that Zhangsan goes to.'

For illustrative purposes, let us consider two logically possible base structures for (51). In (52), *keyi* is base-generated above *shi*, whereas in (53) *keyi* is merged below *shi*. As will be seen, neither structures can derive (51) without violating Output Economy.

(52) [_{TP} Zhangsan [keyi [shi [_{vP} qu *Beijing_F*]]]]

(53) [_{TP} Zhangsan [shi [keyi [_{vP} qu *Beijing_F*]]]]

For (52), the modal starts out at a position higher than the focus operator *shi*. It follows then that the movement of the modal could not possibly affect the calculation of the focus set, which is already closed off by *shi*. On the other hand, in (53), the modal is below *shi* and its movement may potentially alter the calculation of the focus set. However, we suggest that the movement of *keyi* is disallowed due to a locality constraint. Specifically, *keyi* can move

²¹ The focus could also be on the verb or the whole verb phrase. For simplicity, we stick to the object focus case.

over the focus operator *shi*, but not the subject *Zhangsan*. This is because the effect on the calculation of the focus set is achieved by crossing *shi*.²² Put differently, movement of *keyi* in (53) is allowed and it results in a surface word order that looks exactly like (52).²³ Further movement of *keyi* is disallowed as it cannot affect the calculation of the focus set anymore. The same reasoning applies to other cases discussed in §2.1 and §2.2. The generalization in (22) is thus derivable from a movement analysis of modals supplemented with a version of Output Economy.

4.2. A-not-A questions and focus reading

In the previous sections, we have witnessed the connection between high modals and focus interpretations. Accordingly, the initial puzzle posited by A-not-A questions and high modals falls into a more general picture of modal movement licensed by focus interpretations. However, recall that high modals are often discussed specifically in connection to A-not-A questions in the literature. We suggest that this may not be a coincidence and there is a way

²² This is reminiscent of Fox's (2000) Shortest Move constraint on Quantifier Raising. We leave further comparison to future research.

²³ The structure is indeed allowed as shown in the grammatical sentence below, though it is highly marked:

(ix) Hao, wo chengren Zhangsan keyi shi qu-le **Beijing**_F er bu shi
 okay 1SG admit Zhangsan may FOC go-PERF Beijing butNEG FOC
 Taipei.
 Taipei
 'Okay, I admit that it could be the case that Zhangsan has gone to Beijing but not Taipei.'

in which A-not-A questions combine very naturally with high modals.

Consider again the following contrast, repeated from (2) and (3):

(54) Root modals cannot precede the subject (=2)

{*neng / *hui / *keyi} Zhangsan {neng / hui / keyi} zhunbei wancan
can will may Zhangsan can will can prepare dinner

Int.: ‘Zhangsan can/ will/ may prepare the dinner.’

(55) Root modals in A-not-A form can precede the subject (=3)

neng-bu-neng/hui-bu-hui/ ke-bu-keyi Zhangsan zhunbei
RED-NEG-can RED-NEG-will RED-NEG-may Zhangsan prepare
wancan?
dinner

‘Can/ will/ may it be that Zhangsan prepare the dinner?’

As is clear by now, the sentence in (54) is degraded since the subject does not receive a focus interpretation. Crucially, if A-not-A questions were *completely* unrelated to high modals, then we would expect that the sentence in (55) to pattern with (54) in terms of unacceptability, especially in the absence of any focus-marking devices or contexts. Nonetheless, (55) is fully acceptable. This suggests that A-not-A questions contribute to some potential licensing environment for high modals (i.e. focus interpretations), which is otherwise absent in (plain) declarative sentences. However, how A-not-A questions may trigger a focus interpretation is a non-trivial question, since, not every A-not-A question carries narrow focus. For example, in (56), the context indicates that the question is focus-neutral and carries broad focus:

(56) [Context: The speaker knows nothing about Zhangsan:]

Zhangsan qu-bu-qu Beijing?

Zhangsan RED-NEG-go Beijing

‘Does Zhangsan go to Beijing?’ (broad focus)

Although not every A-not-A question triggers narrow focus, there are cases where the link with narrow focus is clear. Schaffar & Chen (2001) and Tsai & Yang (2015) propose that A-not-A questions may be divided into two types. The first type, *inner* A-not-A, is formed by ordinary verbs and contributes to a neutral/broad focus interpretation, e.g. (56) above. The second type, *outer* A-not-A, is often formed by copular *shi* (or epistemic modals) and contributes to a narrow focus interpretation. (57) exemplifies a narrow subject focus in the outer A-not-A questions.

(57) [Context: The speaker knows that only Zhangsan likes Beijing:]

shi-bu-shi Zhangsan_F qu Beijing?

RED-NEG-COP Zhangsan go Beijing

‘Does Zhangsan (but not sb. else) go to Beijing?’ (narrow focus: subj.)

In structural terms, they analyze the inner A-not-A head as one within the *vP* domain, whereas the outer A-not-A is occupying a higher functional head in the CP domain (labelled as the head of *Pol2P* in Schaffar & Chen 2001 and the head of *AstP* in Tsai & Yang 2015). Essentially, this outer A-not-A head triggers a narrow focus interpretation, i.e. subject focus in (57).

(58) [CP ... A-not-A^{outer} ... [TP subject ... [_{vP} ... A-not-A^{inner} ...]]]

Verbs, however, are too low to move to the outer A-not-A head.

(59) *Qu-bu-qu Zhangsan_F Beijing?

RED-NEG-go Zhangsan Beijing

‘Does Zhangsan (but not someone else) go to Beijing?’

We suggest that A-not-A questions formed with high modals (e.g. (24)a, reproduced below) are outer A-not-A questions containing a higher functional head in CP domain. The outer A-not-A head triggers a narrow focus on the subject. Under our proposal, the movement of *keyi* is licit in crossing the focused subject. After the movement, *keyi* fuses with the outer A-not-A head to form *ke-bu-keyi*. The derivations are given in (61). Crucially, we propose that the modal movement is prior to A-not-A formation, i.e. the moving element is only the modal *keyi*, but not *ke-bu-keyi*.

(60) Ke-bu-keyi (shi) Zhangsan_F qu Beijing? (= (24)a)

RED-NEG-may FOC Zhangsan go Beijing

‘Is it allowed to be that Zhangsan (but not someone else) go to Beijing?’

(61) a. Subject focus

[_{CP} A-not-A [(shi) [_{TP} Zhangsan_[+Focus] [*keyi* [go Beijing]]]]

b. Modal movement

[_{CP} A-not-A [*keyi* [(shi) [_{TP} Zhangsan_[+Focus] [___ [go Beijing]]]]



c. A-not-A formation

[_{CP} ke-bu-keyi [(shi) [_{TP} Zhangsan_[+Focus] [___ [go Beijing]]]]

There is indeed evidence for the higher position of the outer A-not-A head from the calculation of focus set. First, A-not-A questions arguably denote a set of propositional alternatives {p, not p} (Dong 2009, which can be dated back to Huang’s 1982 domain of restriction). Also, the focus operator *shi*, by nature of its resetting function, will close off the focus set. Accordingly, if the A-not-A sequence is lower than the *shi*, focus intervention effects in the sense of Beck (2006) will arise, illustrated below in (62)-(63). Hence, the A-not-A must be higher than *shi* for successful semantic composition.

(62) **Shi Zhangsan_F qu-bu-qu Beijing?*

FOC Zhangsan RED-NEG-go Beijing

Int.: ‘Does Zhangsan (but not someone else) go to Beijing?’

(63) *[*shi* [_{TP} Zhangsan_[+Focus] [_{VP} A-not-A [go Beijing]]]]

With all these ingredients, now consider the focus calculation in (64) (without modal movement), and (65) (with modal movement).

(64) Outer A-not-A without modal movement

[_{CP} A-not-A [*shi* [_{TP} Zhangsan_[+Focus] [*keyi* [go Beijing]]]]]

(65) Outer A-not-A with modal movement

[_{CP} A-not-A [*keyi* [*shi* [_{TP} Zhangsan_[+Focus] [__ [go Beijing]]]]]]

In (64), where *keyi* does not move and stays within TP, the focus set of TP is {Zhangsan may go to Beijing, Lisi may go to Beijing, Wangwu may go to Beijing ...}. It is closed off by *shi*. The higher A-not-A triggers an alternative set of the prejacent proposition and its complement, i.e. {it is Zhangsan that can go to Beijing, it is not Zhangsan that can go to Beijing}. In (65), in

contrast, the movement of *keyi* allows it to escape the focus set of TP. The TP focus set is now {Zhangsan goes to Beijing, Lisi goes to Beijing, Wangwu goes to Beijing ...}, and is closed off by *shi*. The higher A-not-A triggers an alternative set of {it can be Zhangsan that goes to Beijing, it cannot be Zhangsan that goes to Beijing}. Thus, although the A-not-A and its alternative sets scope over the modal in both cases, the lower focus set calculations are different after the modal movement. There is no violation to the proposed output economy and hence the modal movement in A-not-A questions is licit.

5. Conclusion

This paper addressed a long-standing puzzle concerning Chinese modals, that is, A-not-A questions appear to exceptionally license an otherwise unavailable pre-subject position for root modals. It has been argued here that A-not-A licensing is actually just the tip of the iceberg and high root modals constitute a broader phenomenon related to focus interpretations in general.

We proposed that root modals can undergo (optional) movement across a focused element to a higher position, yielding a change in focus set calculation. Specifically, a modal moving out of the scope of a focus operator will “escape” the focus set and amount to a different set of alternatives. We argued that this movement is constrained by a focus version of output economy (Fox 2000, Reinhart 1995, Chomsky 2000, 2001, Miyagawa 2006,

2011), explaining why there must be a focus on the path of modal movement. We discussed the relevance of A-not-A questions to high root modals and suggested that outer A-not-A questions contribute to a narrow (subject) focus reading that licenses modal movement.

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