A head-to-Specifier Movement Account of Multiple Pre-Subject Modals in Mandarin Chinese

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Thesis

Pre-subject modal constructions in Mandarin Chinese are derived from post-subject modal constructions through head-to-specifier movement of the modals to Spec, FocP.

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Modals in Mandarin Chinese

There are three kinds of modals in Mandarin Chinese, which can appear in the same sentence:

- epistemic (M_{epis}): *keneng* 'it may be the case that …' *yinggai* 'it should be the case that …'
- deontic (M_{deon}): *bixu* 'must,' *dei*, 'must,' *keyi* 'be allowed to'
- dynamic (M_{dyn}): *keyi* 'be able to,' *neng* 'be able to'

There is usually the ordering of $M_{epis} \prec M_{deon} \prec M_{dyn}$:

(1) Zhangsan keneng bixu qu Chengdu.
Zhangsan MAY MUST go Chengdu
'It may be the case that Zhangsan must go to Chengdu.'

(2) Zhangsan bixu neng zuo zhe ti.
Zhangsan MUST BE.ABLE solve this problem
'It is required that Zhangsan be able to solve this problem.'

Modals in Mandarin Chinese

They can either appear to the left of the subject or to the right:

(3) a. **keneng** Zhangsan qu Chengdu.
MAY Zhangsan go Chengdu
'It may be the case that Zhangsan will go to Chengdu.'

b. Zhangsan **keneng** qu Chengdu.
Zhangsan MAY go Chengdu
'It may be the case that Zhangsan will go to Chengdu.'

The first kind we will call pre-subject modal constructions; the second, post-subject modal constructions.

Multiple-Modal Constructions in Mandarin Chinese

This is also true when there are multiple modals:

(4) a. **yinggai dei** Huang laoshi shuo hua le.
should must Huang teacher say speech SP
'It should be the case that Teacher Huang must speak now.'

b. Huang laoshi **yingai dei** shuo hua le.
Huang teacher SHOULD MUST say speech SP

le, glossed as SP, is a sentence-final aspectual particle.

Subject-Merge Approaches

- By Subject-Merge approaches, we mean those deriving post-subject modal constructions from pre-subject modal constructions through either Internal Merge or External Merge of the subject, such as topicalization (Tsai, 2015; Pan, 2018), raising (Lin, 2010, 2012), or control (Lin, 2010, 2012; Pan, 2018).
- We will illustrate this camp of approaches with Lin's 2010; 2012 account of modals.

Lin (2012)

If the modals follow the subject, then the subject undergoes raising across epistemic modals and controls into deontic and dynamic modals:

(5) [$_{TP}$ Zhangsan$_i$ T_{FIN} [$_{VP}$ keneng [$_{TP}$ t_i T_{FIN} [$_{VP}$ keyi [$_{TP}$
Zhangsan MAY BE.ALLOWED
PRO_i T_{NONFIN} qu Taibei]] le] ∅]]
go Taipei SP
'Zhangsan may have become able to go to Taipei.'

Problems with Subject-Merge

Hsu (2019) provides a host of arguments against Subject-Merge approaches.

- Pre-subject modal constructions are more marked in terms of information structure than post-subject counterparts; post-subject ones should be the base case.
- Pre-subject modal constructions display focus-related properties that cannot be explained by Subject-Merge approaches.

Information-Structural Markedness

- Pre-subject modal constructions express *propositional focus*, so it is the entire proposition that is in focus rather than a sub-constituent; post-subject ones are pragmatically neutral.
- We expect the more neutral structure to be the base case.
- In the following example, only the pre-subject modal construction is felicitous in this special context, when the entire proposition should be in focus. Post-subject modal constructions do not have this special focus property.

Informational-Structural Markedness

(6) [Context: Both A and B hear the doorbell ringing.]

A: zenme le?
how SP
'What happened?'

B: yinggai Zhangsan mai pisa huilai-le
should Zhangsan buy pizza return-PFV
'It should the case that Zhangsan has bought pizzas and now returned.'

B′: #Zhangsan yinggai mai pisa huilai-le
Zhangsan should buy pizza return-PFV
'Zhangsan should have bought pizzas and now returned.'

(Hsu, 2019, 24, ex. (10))

Focus Intervention

It has been observed that focus operators (F-Op) will interfere with interrogative operators (Q-Op) (Beck, 2006):

(7) *Beck-style intervention effects*

*[Q-Op$_x$ … F-Op [$_{TP}$ … *wh*$_x$ …]]

Pre-subject modal constructions display the same effects:

(8) *__Q-Op__$_x$ [$_{FocP}$ yinggai __F-Op__ Zhangsan xihuan-guo __shei__$_x$ ne]?
should Zhangsan like-EXP who Q
Intended: 'Who should have Zhangsan liked?'
(Hsu, 2019, 32, ex. (23a))

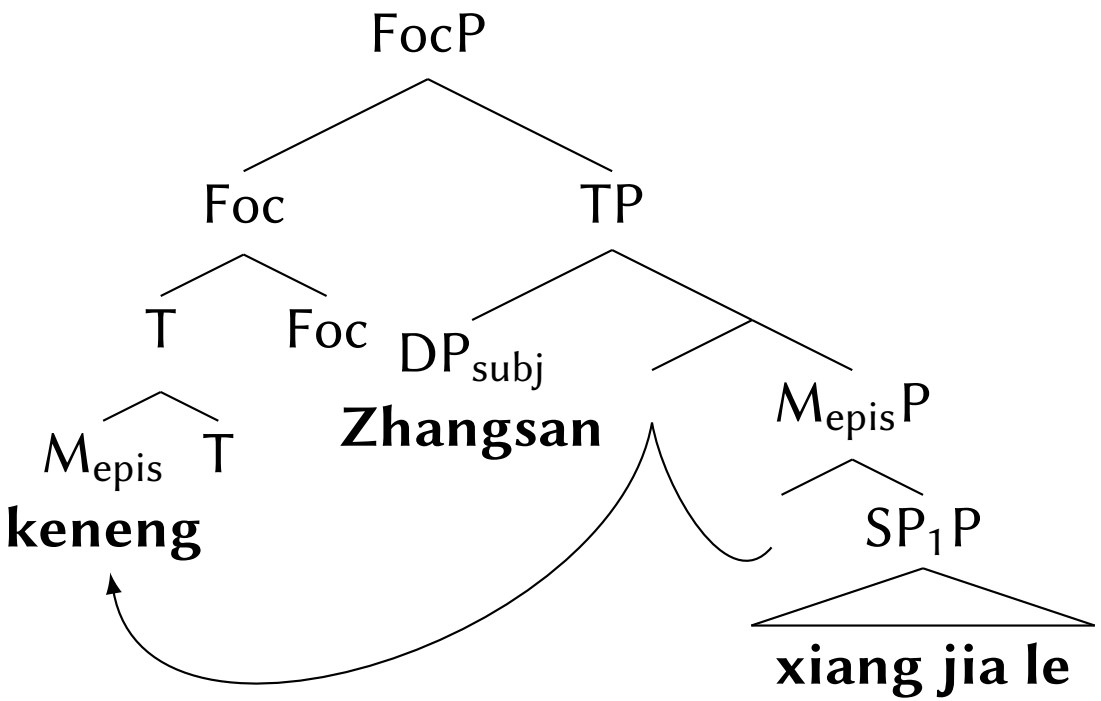
There is no way for Subject-Merge approache to derive such an effect.

Head Movement Approaches

Hsu (2019) involves a drastically different approach. Now, post-subject modal constructions are the base configurations, while pre-subject ones are derived from them through head movement of the modal. The presence of a Foc^0 head, indicating propositional focus, draws modals to it across the subject.

Hsu (2019)

(9) Hsu's (2019) Proposal



Hsu (2019)

This approach is now able to account for the focus-related properties of pre-subject modal constructions. Example (9) for focus intervention reproduced here.

(10) *__Q-Op__$_x$ [$_{\text{FocP}}$ [$_{\text{Foc}}$ yinggai$_i$] Zhangsan t_i xihuan-guo **shei**$_x$
should Zhangsan like-EXP who
ne]?
Q
Intended: 'Who should have Zhangsan liked?'

(Hsu, 2019, 32, ex. (23a))

Problems of Hsu (2019) – HMC

However, the head movement approach fails to generate multiple pre-subject modal constructions. We know by the

(11) Head Movement Constraint (Travis, 1984, 131)

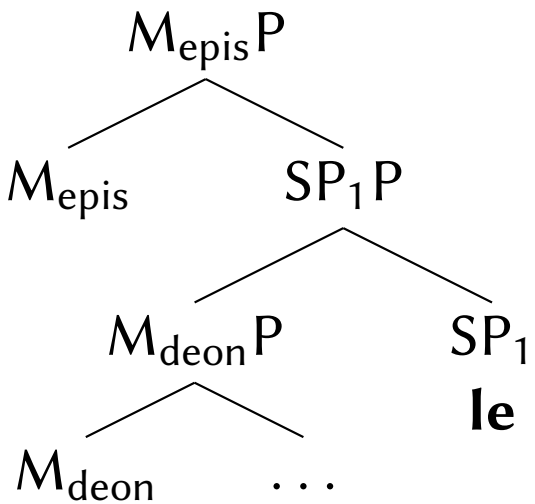
An X^0 may only move into the Y^0 which properly governs it.

that we cannot skip heads in head movement.

Problems of Hsu (2019) – HMC

The local structural context of the Chinese involved, according to studies such as Erlewine (2017); Lin (2010), is as follows. Notice the intervening head *le* between the two modals.

(12)



Problems of Hsu (2019) – HMC

Hsu (2019) wrongs predicts the ungrammaticality of the following:

(13) keneng$_i$ keyi$_j$ Lisi [$_{M_{epis}P}$ t_i [$_{SP_1P}$ [$_{M_{deon}P}$ t_j qu canjia
MAY BE.ALLOWED Lisi go join
bisai] [$_{SP_1}$ le]]]
competition SP
'It may be the case that Lisi is now allowed to join the competition.'

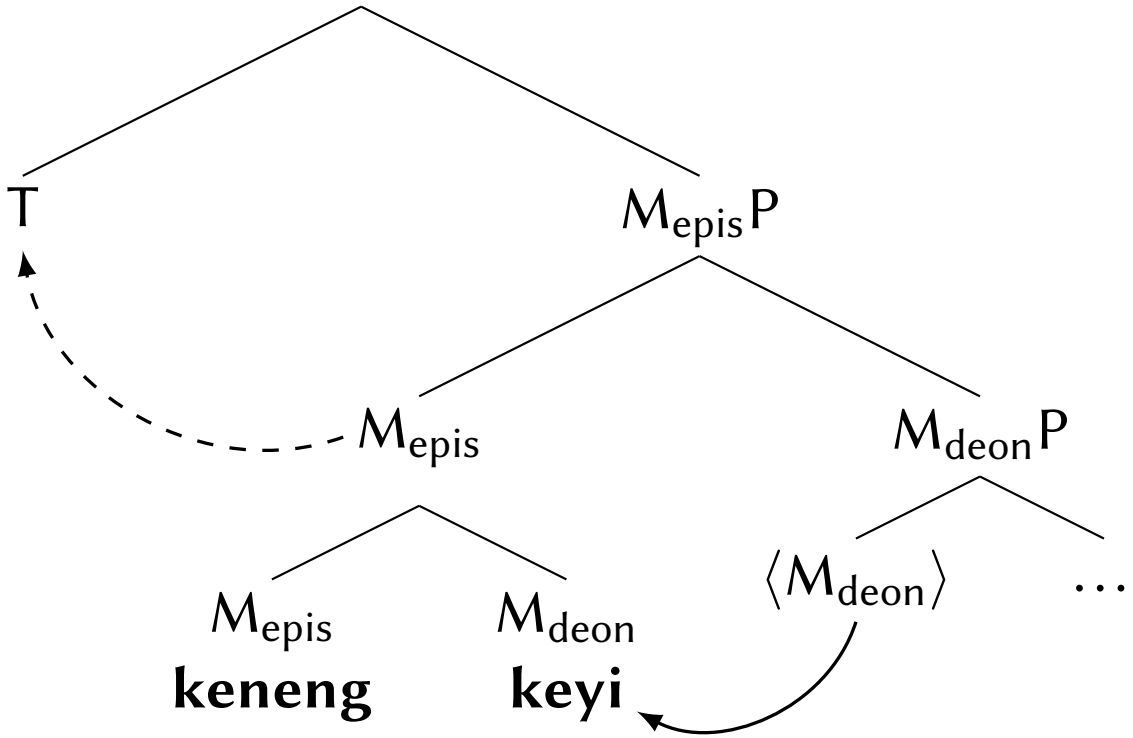
Since SP_1 *le* is skipped if we move the complex head formed from *keneng*, T, and *keyi* (not shown) to Foc^0.

Problems of Hsu (2019) – Order of Multiple Modals

Additionally, Hsu (2019) predicts the wrong order of the moved heads. Left adjunction of heads is usually expected for head movement (Kayne, 1994); it has also be argued that Mandarin Chinese only allows left adjunction (Lin, 2012; Paul and Whitman, 2010). Then, if head movement were the mechanism for deriving multiple pre-subject modals, lower heads should surface to the left of higher heads.

Problems of Hsu (2019) – Order of Multiple Modals

(14)



Problems of Hsu (2019) – Order of Multiple Modals

This is clearly not the case, as we see in this same example, that the order of the moved heads is the same the same order:

(15) **keneng$_i$** **keyi$_j$** Lisi [$M_{epis}P$ t_i [SP_1P [$M_{deon}P$ t_j qu canjia
MAY BE.ALLOWED Lisi go join
bisai] [SP_1 le]]]
competition SP
'It may be the case that Lisi is now allowed to join the competition.'

An Interim Summary

- Subject-Merge approaches lack focus-related explainability
- The only Head Movement approach, Hsu (2019), only accommodates a single pre-subject modal

The aim then is to come up with a solution to both problems.

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The Current Proposal

Our proposal of head-to-specifier movement is such a solution, based on head-to-specifier movement. Head-to-spec movement is proposed in Harizanov and Gribanova (2019); Harizanov (2019), primarily with reference to Bulgarian:

(16) a. **pročela** [Bulgarian]
FUT be-2.SG been-FEM read-FEM book-the
'You will have read the book.'
(Embick and Izvorski, 1997, ex. (30a))

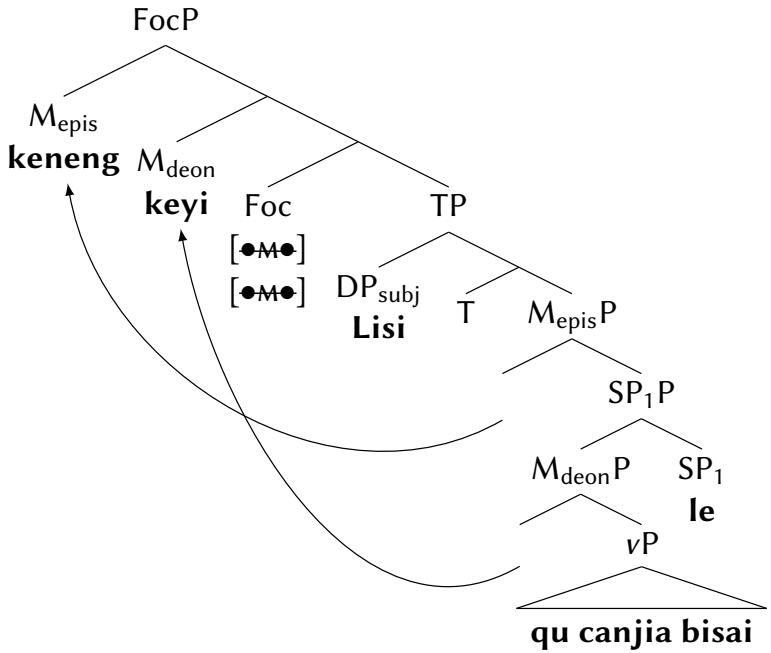
b. **pročela**$_1$ bila $_____1$ [Bulgarian]
read-FEM FUT be-2.SG been-FEM book-the
(Embick and Izvorski, 1997, ex. (30c))

Head-to-Spec Movement

Here, the verb head engages in displacement that clearly violates the HMC, making head-to-head movement unlikely. Therefore, the mechanism involved is phrasal movement, or Internal Merge, of the verb. This is exactly the mechanism we propose for multiple pre-subject modal constructions in Chinese.

The Derivation

- Foc^0 has multiple [•M•] features
- They attract M_{epis}, M_{deon}, or M_{dyn} to Spec, FocP
- Tucking-In (Richards, 2001) keeps the relative order of the modals unchanged
- Presence of Foc^0 confers propositional focus
- Intervening Foc^0 between wh-Op and the variable derives focus intervention



Tucking-In

When α and β are both attracted by the same head, the (subsequent) movement of β must create a specifier *lower* than the specifier created by movement of α (Richards, 2001).

(17) Ko$_1$ si koga$_2$ tvrdio da je t_1 istukao t_2?
who AUX whom claimed that AUX beaten
'Who did you claim beat whom?'
(Željko Bošković, 1997, Serbo-Croatian)

Tucking-In

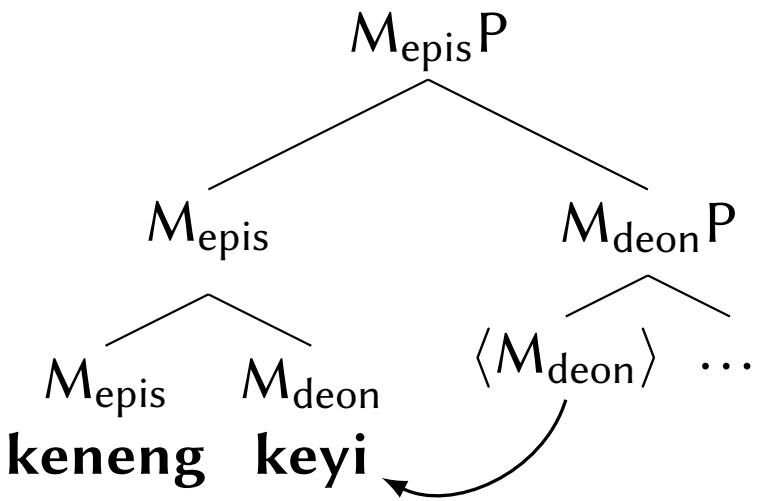
Since in a multiple pre-subject modal constructions, all modals are attracted by the same Foc^0 head, we can apply Tucking-In to produce the correct order:

(18) [$_{FocP}$ **keneng$_i$** **keyi$_j$** Foc^0 Lisi [$_{M_{epis}P}$ t_i [$_{SP_1P}$ [$_{M_{deon}P}$ t_j qu
MAY BE.ALLOWED Lisi go
canjia bisai] [$_{SP_1}$ le]]]]
join competition SP
'It may be the case that Lisi is now allowed to join the competition.'

Tucking-In

The left adjunction in traditional movement *reverses* the base order

(19)



Tucking-In of phrasal movement resulting from a single head *preserves* the base order, which is desired.

Obviation of HMC

Notice that since our approach no longer assumes head movement, as does Hsu (2019), there is no reason for the derivation to follwo the Head Movement Constraint either. The fact that the SP_1 *le* intervenes between modals moved to the left of the subject does not pose a problem to our approach. Foc^0, with [•M•] features, only attracts modals, and no other hands, in this case, to its specifier.

Minimality

However, this obviation of HMC does not mean that the movement proposed is unrestricted. Due to Relativized Minimality (Rizzi, 1990), movement to Spec, FocP cannot skip *modals*. So our approach predicts that only the highest modals can be moved to Spec, FocP, which is borne out.

(20) *keyi$_i$ Lisi yinggai t_i qu canjia bisai
BE.ALLOWED Lisi SHOULD go join competition
'It may be the case that Lisi is now allowed to join the competition.'

Focus-Related Properties

Our approach, further, preserves the focus-related explainability of Hsu (2019), which is lacking in all of the Subject-Merge approaches.

(21) *$\mathbf{Q\text{-}Op}_x$ [$_{\text{FocP}}$ yinggai$_i$ [$_{\text{Foc}'}$ $\mathbf{Foc^0}$ Zhangsan t_i xihuan-guo
should Zhangsan like-EXP
$\mathbf{shei}_x$ ne]]?
who Q
Intended: 'Who should have Zhangsan liked?'
(Hsu, 2019, 32, ex. (23a))

Propositional focus is trivially predicted with the presence of Foc^0; focus-intervention retained, since Foc^0 still intervenes between the *wh*-operator and the bound variable.

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Conclusion

In this talk, we have seen that our head-to-specifier movement approach successfully accounts for all the properties of multiple pre-subject modal constructions hitherto observed, which no previous analysis is able to accomplish.

- Focus: propositional focus and focus intervention
- Information-structural markedness
- No HMC effects
- Minimality effects
- Preservation of base order

Conclusion

Thanks for listening!

Beck, S. (2006). Intervention effects follow from focus interpretation. *Natural Language Semantics 14*(1), 1–56.

Embick, D. and R. Izvorski (1997). Participle-auxiliary word orders in slavic. In *In Proceedings of Formal Approaches to Slavic Linguistics 4: The Cornell Meeting, ed. Wayles Browne, Ewa Dornisch, Natalia Kondrashova, and Draga Zec, 210-239. Ann Arbor: Michigan Slavic.* Publications.

Erlewine, M. Y. (2017). Low sentence-final particles in Mandarin Chinese and the final-over-final constraint. *Journal of East Asian Linguistics 26*(1), 37–75.

Harizanov, B. (2019). Head movement to specifier positions. *Glossa: a journal of general linguistics 4*(1).

Harizanov, B. and V. Gribanova (2019, May). Whither head movement? *Natural Language & Linguistic Theory 37*(2), 461–522.

Hsu, Y.-Y. (2019). Marking propositional focus: A function of pre-subject modals. In K. Lee-Legg and W. James (Eds.), *Indian University Linguistics Club Working Papers*, Volume 2, pp. 20–42.

Kayne, R. S. (1994). *The Antisymmetry of Syntax*. Cambridge, Massachusetts: MIT Press.

Lin, T.-H. J. (2010). Finiteness of clauses and raising of arguments in Mandarin Chinese. *Syntax 14*(1), 48–73.

Lin, T.-H. J. (2012). Multiple-modal constructions in Mandarin Chinese and their finiteness properties. *Journal of Linguistics 48*(1), 151–186.

Pan, J. V. (2018, Jan). Derivation of the apparent narrow scope of sentence-final particles in Chinese: A reply to Erlewine (2017). *Studies in Chinese Linguistics 39*(2), 99–126.

Paul, W. and J. Whitman (2010). Applicative structure and mandarin ditransitives. In M. Duguine, S. Huidobro, and N. Madariaga (Eds.), *Argument Structure and Syntactic Relations: A Cross-linguistic Perspective*. John Benjamins Pub. Company.

Richards, N. (2001). *Movement in Language: Interactions and Architectures*. Oxford: Oxford University Press.

Rizzi, L. (1990). *Relativized minimality.* The MIT Press.

Travis, L. (1984). *Parameters and Effects of Word Order Variation.* Ph. D. thesis, Massachusetts Institute of Technology.

Tsai, W.-T. D. (2015, Jul). On the topography of Chinese modals. *Beyond Functional Sequence*, 275–294.

Željko Bošković (1997). Superiority effects with multiple wh-fronting in serbo-croatian. *Lingua 102*(1), 1–20.